DOCUMENT RESUME

ED 094 373 CS 001 288

TITLE	The Rationale, Development, and Standardization of a Basic Word Vocabulary Test: A Methodological Report on the Conceptual Representation and Measurement of American-English Basic Word Vocabulary Acquisition. Data Evaluation and Methods Research, Series 2, No. 60.
REPORT NO	DHEW-HRA-74-1334
PUB DATE	Apr 74
NOTE	81p.
AVAILABLE FROM	Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402 ($1.15, Price Subject to Change)
EDRS PRICE	MF-$0.75 HC-$4.20 PLUS POSTAGE
DESCRIPTORS	*Basic Vocabulary; Communication Skills; *National Surveys; Psychological Studies; Test Construction; *Verbal Ability; *Verbal Communication; Verbal Tests
IDENTIFIERS	*Health Examination Survey

ABSTRACT

The National Health Survey Act of 1956 provides for the establishment and continuation of a National Health Survey to obtain information about the health status of the population in the United States. The psychological component of the Survey is included to provide a more complete assessment of the health and well-being of the population. A first effort in developing specific psychological examination procedures within an overall plan of psychological assessments was directed toward developing a test that could be used in assessing level of development in verbal ability. The result was the Basic Word Vocabulary Test, which was developed to provide a measurement instrument of word knowledge acquisition with two additional properties that are not extant in any other standardized vocabulary test (1) a carefully specified population of words with (2) a range of application from about the third level of literacy to the highest level of word knowledge acquisition. These two properties permit assessment of a wide range of vocabulary development in terms of absolute level and relative standing in reference to various normative groups on one continuous scale. The results of the studies to date and copies of the tests are included. (TC)

ED 094373

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

VITAL and HEALTH STATISTICS
Series 2 - Number 60
DATA EVALUATION AND METHODS RESEARCH

US DEPT OF HEW

NCHS

SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: CS TM
In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

The Rationale, Development, and Standardization of a Basic Word Vocabulary Test

Vital and Health Statistics-Series 2-N0. 60

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 2040. - Price $1.15

ED 094373

DATA EVALUATION AND METHODS RESEARCH

Series 2
Number 60

The Rationale, Development, and Standardization of a Basic Word Vocabulary Test

A methodological report on the conceptual representation and measurement of American-English basic word vocabulary acquisition.

DHEW Publication No. (HRA) 74-1334

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

Health Resources Administration
National Center for Health Statistics
Rockville, Md. April 1974

NATIONAL CENTER FOR HEALTH STATISTICS

EDWARD B. PERRIN, Ph.D., *Director*

PHILIP S. LAWRENCE, Sc.D., *Deputy Director*
DEAN E. KRUEGER, *Acting Associate Director for Analysis*
GAIL F. FISHER, *Associate Director for the Cooperative Health Statistics System*
ELIJAH L. WHITE, *Associate Director for Data Systems*
IWAO M. MORIYAMA, Ph.D., *Associate Director for International Statistical Programs*
EDWARD E. MINTY, *Associate Director for Management*
ROBERT A. ISRAEL, *Associate Director for Operations*
QUENTIN R. REMEIN, *Associate Director for Program Development*
PHILIP S. LAWRENCE, Sc.D., *Acting Associate Director for Research*
ALICE HAYWOOD, *Information Officer*

DIVISION OF HEALTH EXAMINATION STATISTICS

ARTHUR J. McDOWELL, *Director*
GARRIE J. LOSEE, *Deputy Director*
HENRY W. MILLER, *Chief, Operations and Quality Control Branch*
LINCOLN I. OLIVER, *Chief, Psychological Statistics Branch*
HAROLD J. DUPUY, Ph.D., *Psychological Advisor*

Vital and Health Statistics-Series 2-No. 60

DHEW Publication No.(HRA) 74-1334
Library of Congress Catalog Card Number 73-600251

PREFACE

The National Health Survey Act of 1956 provides for the establishment and continuation of a National Health Survey to obtain information about the health status of the population in the United States. The responsibility for the development and conduct of that program is placed with the National Center for Health Statistics, a research-oriented statistical organization within the Health Resources Administration of the Public Health Service. The Health Examination Survey is one of three different programs employed by the National Center for Health Statistics to accomplish the objectives of the National Health Survey. It is used to collect data by drawing samples of the civilian noninstitutionalized population of the United States and undertakes to characterize the population under study by means of medical, dental, psychological, and nutritional examination and various tests and measurements.

In addition to the data collected by the examining, measuring, and testing procedures, a wide range of other data are collected concerning each of the sample persons examined. Therefore it is not only possible to study the many potential relationships of the examination findings to one another but also to investigate the relationships of these findings to demographic and socioeconomic factors.

The psychological component of the Health Examination Surveys is included to provide a more complete assessment of the health and well-being of the U.S. population. It is embedded in an interdisciplinary approach in the study of mental health, psychologic relationships with medical and nutritional conditions, and of growth, development, and aging.

Examination conditions and competing requirements for examination time dictate that each examination component must be specifically designed to fit within these constraints. A long range effort is underway to develop specific psychological examination procedures within an overall plan of psychological assessments that can be employed in these Health Examination Surveys. A first effort was directed towards developing a test that could be used in assessing level of development in verbal ability. Verbal ability was selected because of its central role in intellectual development and in formal human communications.

The result of this effort was the development of a vocabulary test, the Basic Word Vocabulary Test. The rationale and development of this test are described in this report. The test was developed to provide a measurement instrument of word knowledge acquisition with two additional properties that are not extant in any other standardized vocabulary test. These two properties are reflected in its content representation (content validity) of a carefully specified population of words and in its range of application from about the third grade level of literacy to the highest level of word knowledge acquisition. These two properties permit assessment of a wide range of vocabulary development in terms of absolute level (as estimates of the word population) and relative standing in reference to various normative groups, i.e., age-education standing, on one continuous scale. With proper developmental work, assessment of vocabulary development can be extended downward to about 2 years of age and thus extend measurement-capability along the full range of this developmental aspect of psychosocial functioning.

CONTENTS

	Page
Preface	iii
Functions of Language and Vocabulary Development	1
Vocabulary and Language Development and Growth	1
Vocabulary and General Intellectual Development	2
Vocabulary and Human Communication	2
Vocabulary and Symbolic Thinking	3
Vocabulary Tests and Cultural Bias	3
Rationale of the Basic Word Vocabulary Test	3
Conceptual Representation	3
Purposes and Objective	4
Development of the Test	4
Defining the Unit of Measurement and Estimating the Word Population	4
Criteria for Establishing Knowledge of the Basic Words	7
Standardization	9
Procedure	9
Sex and Grade Relationships	10
Item Analyses	11
Grade and Age Norms	14
Adult Norms	18
Other Norms	19
Use of Tables	20
Alternate Short Forms of the BWVT	22
Special Short Form of the BWVT	23
Recommended Scoring Method	26
Reliability and Validity	29
Reliability of the BWVT	29
Validity of the BWVT	30
Discussion	33
Limitations	33
Growth and Development of Basic Word Vocabulary	33
Applications of the BWVT	34
Further Research and Development	35

CONTENTS—Con.

	Page
Summary and Conclusion	35
References	36
Appendix I. Brief Description of Dictionaries	37
Appendix II. Listing of Nonbasic Words in 1-Percent Sample from Webster's	38
Derived, Variant, and Redundant Words	38
Technical, Archaic, Foreign, and Slang Words	39
Words Not Main Entries in all Four Dictionaries	40
Abbreviations	45
Hyphenated Words and Word Compounds	46
Proper Names	50
Appendix III. Instructions for Administering the Basic Word Vocabulary Test in a School Situation	53
Appendix IV. The Basic Word Vocabulary Test	54
Appendix V. Scoring Method for Full Scale Basic Word Vocabulary Test and Answer Key	61
Appendix VI. Short Forms X, Y, and Z, The Basic Word Vocabulary Test	62
Appendix VII. Scoring Method for Short Forms and Answer Keys	71

SYMBOLS

Data not available	. . .
Category not applicable	. . .
Quantity zero	-
Quantity more than 0 but less than 0.05	0.0
Figure does not meet standards of reliability or precision	*

THE RATIONALE, DEVELOPMENT, AND STANDARDIZATION OF A BASIC WORD VOCABULARY TEST

Harold J. Dupuy, Ph.D., *Division of Health Examination Statistics*

FUNCTIONS OF LANGUAGE AND VOCABULARY DEVELOPMENT

Language has been devised and developed for all kinds of uses—for exciting attention, for the expression of feelings, for graphic description, for conveying instructions, for service in closely reasoned thinking, for scientific exposition, for disputation, for rhythmic delight, for gossip, and for abuse. Language serves to assist memory and facilitate thought; to communicate meaning and, when necessary or desired, to disguise it; to state intentions or merely to intimate their nature; to influence or control the actions of others; and to provide substitute satisfactions for those that would normally be gained by the exercise of bodily activity.[1]

Measurement of vocabulary has long interested educators and psychologists because of its importance in language development and growth, its relationship with general intellectual development, its use in human communication, and its function in symbolic thinking.

In studying the relationships of vocabulary size with language development and growth, precise definitions of terms, measurement procedures used, and the nature of the measuring situation must be clearly stated. Attention should be given not only to measuring vocabulary growth in terms of the increase in number of words available for use but also in terms of the knowledge of range of definitions and precision of meanings given words may have.

The strong relationship between vocabulary size and measures of general intellectual development has long been noted not only among individuals in the normal range of general intellectual ability and maturity but also among the gifted, mentally retarded, and for children as young as 2 years of age.

A person's ability to read and listen with understanding, to express himself accurately and precisely in speech and writing, and to use words effectively in symbolic thought processes is undoubtedly related to the number and kinds of words he understands and has at his command.

Vocabulary and Language Development and Growth

One of the earliest studies, cited by McCarthy,[2] of the measurement of vocabulary in language development and growth was done by Feldmann in 1833, when he reviewed the reports of the vocabulary of 33 children. Since that time a great number of studies of language development and growth have been conducted in trying to estimate the size of the general English language and of individual vocabularies for different age and educational levels.[1-3] However, these efforts have not been successful. These authors[1-3] and others[4,5] have noted some of the difficulties in obtaining consistent estimates across different studies. These include differences among authors in definition, or even failure to specify some or all of the following:

(1) definition of the unit of measurement—the word,
(2) estimates of the word population,
(3) basis for sampling, e.g., the size of the dictionary or the nature of the use situation from which the sampling for the test was taken, and
(4) criteria used in determining word knowledge.

For example, criteria of word knowledge which may be applied are:

(1) recognition of the commonest meaning of a word,
(2) definition in the subject's own words,
(3) proper use of the word in a sentence, citing an illustration, or naming an object, or
(4) simply counting the number of different words used in a given context.

Thus it is important when using a measure of vocabulary size in studying language development and growth that all these aspects of measurement be clearly stated and explicitly defined.

Vocabulary and General Intellectual Development

The strong relationship between vocabulary and general intelligence was noted as early as 1838 by the French physician Esquirol in his studies of mental retardates.[6] He concluded that the individual's use of language provides the most dependable criterion of his intellectual level. The first acceptable measure of general intelligence, the Binet-Simon Scale developed in 1905, also put special emphasis on verbal skills.[6] Terman[7] in 1918 reported a correlation of .91 between mental age and vocabulary with the Stanford Revision of the Binet-Simon Scale. He concluded that a mental age based on a vocabulary test could serve as well as the entire scale. Miner[8] in 1957 reviewed 21 different studies of the relationship of vocabulary with more comprehensive tests of general intellectual functioning and found a median correlation of .83. Practically all major general educational achievement tests and aptitude test batteries for use in school and occupational counseling and personnel selection and classification include a test of verbal ability.[6] Those which do not are usually explicitly labeled as nonverbal or as performance tests of intelligence. Thorndike and Gallup in 1944[9] indicated the need, both in research and in practical projects, for some yardstick with which to measure adult intelligence. Thorndike and Gallup,[9] and Miner[8] used a 20-item structured vocabulary test in their respective studies of American adult intelligence. In the two major tests used for individual testing of general intelligence, the correlations between the vocabulary subtest scores and the total test scores are .83, .82, and .83 for three adult age levels in the Wechsler Adult Intelligence Scale[10] and range from .86 to .96 for four levels of adult intelligence in the Stanford-Binet Form L-M.[11] Miner concludes from his review that vocabulary tests correlate at least as well with tests of general intelligence as the more comprehensive instruments correlate with each other. It is also worthwhile to note that tests of vocabulary or verbal ability can be used as early as age 2 years if not earlier in the measurement of general intellectual attainment.

Vocabulary and Human Communication

Words are our principal means of communication with one another. A limited vocabulary hinders, restricts, and confines the possible use of one's social and intellectual potential. Educational level and attainment of positions in higher level occupations are closely related to the size of one's vocabulary. A person's vocabulary can be divided into two categories: active, composed of speaking and writing vocabularies, and passive, composed of listening and reading vocabularies. Among literate adults speaking vocabulary is generally the most limited while reading and listening vocabularies are the largest. Young children, of course, first build listening and speaking vocabularies and these predominate until the time when reading and writing skills have been sufficiently developed for effective use and further development. Note should also be taken of the many specialized vocabularies in technical fields and occupational trades, among cultural subgroups, and geographic region to mention only a few. Also, there are many meanings or definitions for a given

word as well as differences in the depth or breadth of meaning expressed in a definition of a word. Vocabulary size alone does not insure effective communication but is a major tool in such efforts.[1,6,12-14]

Vocabulary and Symbolic Thinking

Words may be regarded as "thought elements" in the complicated and intricate process of symbolic thinking. Watts,[1] for example, expressed the relationship between language and thought along the following lines: "We find sometimes that we have been thinking only after we have said what we have thought." He quotes other sources, "I talk so as to find out what I think—don't you?" "We must continue to talk about ourselves... till we know ourselves." "I endow'd thy purposes with words that made them known." He cites others who have indicated that intellectual insights may have to be expressed and thus seen for what they really are before the individual himself can accept or reject them. For example, an artist does not, in general, first form a complete image of what he wants to express but finds out what he wants to express by expressing it; he does not know what he will say until he has said it, and it comes as a revelation to himself. A great many thoughts, of course, occur before they are expressed in words. However, when thought is tentatively following new tracks and breaking fresh ground we must put our thoughts into words to make them known. Then we are able to find out what we think by expressing it.

Vocabulary Tests and Cultural Bias

A common criticism of vocabulary tests is that they are unfair to culturally disadvantaged persons. Every psychological test measures a behavior sample. Insofar as culture affects behavior, its influence will and should be reflected in the test. The same cultural differentials that impair an individual's test performance are likely to handicap him in schoolwork, job performance, or any other activity correlated with performance on the test. Tests are designed to show what an individual can do at a given point in time. They cannot tell why he performs as he does nor can they tell how well he might have performed if he had been reared in a more favorable environment. Tests should reveal the effects of cultural deprivation (and the effects of other conditions) so that appropriate remedial steps can be taken. To conceal the effects of cultural disadvantages by rejecting tests can only retard progress toward a genuine solution of certain social problems.[6]

Certainly an English vocabulary test should not be given to a non-English speaking person and then interpreted as an indicator of his general intellectual development. However, it can be used to ascertain the level of acquisition of English word knowledge. While there are many different vocabularies, for example baseball, mathematics, carpentry, and gambling, a general purpose vocabulary test should be based on a good sample of basic American-English words that reflect the vocabulary acquisition of the mainstream of the American-English speaking culture. Verbal communication is important in most of our activities both in receiving and transmitting useful information to the individual and to society.

RATIONALE OF THE BASIC WORD VOCABULARY TEST

Conceptual Representation

The fundamental conceptual formulation is based on an assumption that if there is a population, or subset, of basic or core words in the American-English language that can be identified and defined by a set of criteria, then the acquisition of knowledge about these words can be viewed as a sample of behavior of psychological interest. The construct term "basic word vocabulary" when applied to a person or persons will be used to refer to a sample of behavior presumed to reflect the acquisition of knowledge about this subset of words. It is postulated that if the acquisition of a basic word vocabulary reflects growth and development in basic word knowledge, in general verbal ability, and in general intellectual ability, then the measured level of basic word vocabulary will increase with age in the early years and will be positively correlated with other

indicators of verbal and intellectual ability. For a given measure of basic word vocabulary, its psychometric properties, functional relationship with early age, and magnitude and direction of relationships with other indicators of verbal and intellectual abilities for specific samples of individuals are questions for empirical investigation.

Purposes and Objective

The importance and value of measuring vocabulary size are consistent with the current view among some psychologists[6] that psychological tests, including tests of general intellectual development or intelligence, measure the level of one's developed abilities. If a suitable means can be developed to measure the size of one's basic word vocabulary, then methods, techniques, and conditions can be explored and developed whereby the size of one's basic word vocabulary can be further increased.

A distinction can be made between the size of vocabulary in absolute and relative terms. By "absolute" is meant the total number of words in one's vocabulary. This can be estimated by one's knowledge of a representative sample of a given population of words. By "relative" is meant the size of one's vocabulary in relation to the vocabularies of other groups of persons. There is a need for having some idea of the absolute size of vocabulary at the elementary and high school levels so that growth in size can be assessed through the school years.[3] At the adult level such information would be useful in determining the extent of cultural or environmental deprivation, vocabulary deficiency, and the amount of change over long time periods in vocabulary development due to educational enhancement and other influences and in assessing the level of communication skills required in different occupations.

Thus the purposes for developing a structured basic word vocabulary test are to provide a measure, within certain limits, of the approximate size of an individual's basic word vocabulary and to provide a standard of comparison of his level of verbal development with others of similar characteristics such as age, education, and education within age.

The need to develop such a vocabulary test is based upon the fact that no current vocabulary test exists which purports to measure both the absolute and relative size of one's vocabulary. Two previous studies were found in review of the literature in which attempts have been made to develop vocabulary tests of absolute size.[5,12] However, both of these studies are outdated and they suffer from some weaknesses in methodology and procedures. They do not provide clearly stated criteria of the population of words that their sample represents, or the criteria used in defining their "basic" words (they appear to be main entry words from the 1937 and 1940 editions of the Funk and Wagnall's Dictionary), nor do they provide explicit criteria of word meanings used in determining whether one knows a word.

Thus the objective was to develop a basic word vocabulary test which can serve as a measure of both the absolute and relative size of one's vocabulary. This required developing and explicitly stating the criteria to be used in (1) defining the basic unit of measurement—the basic word, (2) defining the population of basic words, and (3) determining whether one knows a given basic word for the measurement of the absolute size of one's vocabulary. To measure the relative size of one's vocabulary requires administering the test to a number of individuals and developing standards of performance on representative samples with certain characteristics.

The results of this research and development effort should provide a useful tool or instrument that can be used in studying the development and growth of language, the effects of experimental procedures to promote language growth, and that can be used as a measure of general verbal and intellectual development with results comparable to individually or group administered tests or test batteries of these general abilities.

DEVELOPMENT OF THE TEST

Defining the Unit of Measurement and Estimating the Word Population

The following procedures were used in defining the unit of measurement and in estimating the size of the population of words. First a set of criteria was prepared for drawing a sample

of main entry words from *Webster's Third New International Dictionary*.[15] This dictionary has three columns of main entries per page which are labelled herein as A, B, or C from left to right. The criteria for defining a main entry word were:

1. Only main entries were considered, i.e., those words appearing in boldface type and printed at the left margin of the column.
2. All homographs (main entry words spelled the same) for a given word were counted as one word. In the dictionary they are preceded by a superscript number. If the first homograph appeared in the column, it was counted as one word while succeeding homographs were ignored. If the second, third, etc., homographs appeared in the column but the first homograph did not, the word was not counted at all.
3. Prefixes and suffixes were not counted as words, but abbreviations were counted.
4. The letters of the alphabet were not counted as words in any case.

The procedures used in selecting the pages for the sample count were:

1. Pages which were numbered but contained no main entry words, only charts or graphs, were counted and subtracted from the total number (2,662) of dictionary pages. There were 13 such pages.
2. The first and last pages for each letter of the alphabet were counted separately. The middle column was used to obtain an estimate of the number of words on these pages. The number of main entry words was estimated by this method for 49 pages. The letter itself was never counted as a word.
3. Of the remaining 2,600 pages, a sample of 300 pages was drawn. Every 10th page was used, starting with page 10, unless the page to be used was a first or last page of a letter or was a chart page. In that case, the next page was used. Forty additional page numbers were selected randomly in order to get exactly 300 pages. A count was made of the number of words in a column, either the left-hand column (A), the middle column (B), or the right-hand column (C). Columns A, B, or C were counted alternately and only one column per page was counted. Thus for each column A, B, and C 100 separate pages were counted and the count by columns was recorded separately. An analysis of variance among the three columns was computed and the differences in mean number of words per column were not significant at $P = .10$ level ($F = 2.102$ with 2:297 df). The mean or average number of main entry words per column for these 300 pages was 30.2.

The estimated number of main entry words in *Webster's Third New International Dictionary*, based on the 300 sampled columns, was 235,693. An additional 3,813 words were estimated from the first and last pages of each letter. The estimated total number of main entry words was 239,506 with a 95-percent confidence limit of ±10,610 words.

The next step in the procedure was to select a 1-percent sample of main entry words from a rounded population estimate of 240,000 for further consideration. One word was taken from every page of the Webster dictionary except from pages whose numbers ended in 1 (e.g., 1, 521, 831, 1061). The third word from the top of the column was chosen. In determining which word was the third, the same criteria were applied as were used for counting words in the population (i.e., not counting prefixes and suffixes, ignoring all but first homographs, etc.). If the page number ended in 2, 5, or 8, the third word from the top of the left column (column A) was chosen. The third word down in the middle column (column B) was chosen from pages with numbers ending in 3, 6, or 9. Column C, the right column, was used for pages ending in 4, 7, or 0. An example of the procedure follows:

Column and Page Numbers

A	B	C
2	3	4
5	6	7
8	9	10
12	13	14
	etc.	

Pages 1, 11, 21, and so forth were skipped. If there were fewer than three usable main entries in the column, the page number was noted and the page was omitted. When this procedure was completed, the total word count in the sample was 56 words short of the 2,400, the number necessary for a 1-percent sample, so 56 pages ending in the number 1 were sampled. Every fourth page ending in 1,(31,71,...) was sampled until 2,400 words in all were obtained. Columns A, B, and C were successively chosen as in the original procedure.

The words thus chosen were classified into four categories: (1) compounds of two or more words and hyphenated entries, (2) proper names, (3) abbreviations, and (4) others or remainders. Compounds were entries made up of two or more separate words such as "cough drop." Hyphenated words were any entries in which a hyphen appeared in the spelling of the word. Words classified as proper names were main entries followed by an indication that the first letter was always, usually, or sometimes capitalized. Abbreviations were entries followed by the dictionary indication *abbrev.* Only those words designated as "others or remainders" were further considered. There were 1,360 main entry words in this category.

Next, three other major American dictionaries were consulted: *The Random House Dictionary of the English Language,*[16] *the World Book Dictionary,*[17] and *Funk and Wagnalls New Standard Dictionary of the English Language.*[18] (See Appendix I for a brief description of the four dictionaries used.) Any main entry from Webster's dictionary which was in the "other" category but was not a main entry word in any one of these other three dictionaries was put into a separate category. There were 979 such words. The 381 remaining words were main entries in all four dictionaries that were not compounds, hyphenated, proper names, or abbreviations in Webster's. The Random House dictionary was used next to determine if a given word among the 381 remaining words was defined as foreign, archaic (including obsolete or rare), slang or informal, or technical. This dictionary precedes a given definition with an italicized indication of these categories. If the italicized limited-usage indicator preceded all the definitions, the word was appropriately classified. If there was more than one kind of limited-usage indicator, the first meaning was used to classify the word. A total of 74 words fell within one of these categories.

If the word was listed as a main entry in all four dictionaries and was not of limited usage as specified in Random House, it was considered further. The remaining 307 words were classified as either derived or basic according to a set of criteria developed for this purpose. A main entry was considered a derived or variant word form if in any of the four dictionaries

1. The definition mentioned or referred to another form of the same word (e.g., *beck:* a beckoning gesture) or was simply a different tense form (e.g., *supposed:* suppose).
2. The definition was simply a different spelling (e.g., *calimanco:* calamanco).
3. The definition was a different word which provided a fuller definition (e.g., *boxberry:* the checkerberry).
4. The entry was a combination of two or more words and the definition included a reference to one or more of the words (e.g., *bookkeeper:* one who keeps account books).
5. The entry word was a derived form with a base word and affix whose meaning could be understood with knowledge of the meaning of the word and affix (e.g., *adiabatic:* not diabatic).

Thus a basic word is a single word form and not a proper name, abbreviation, affix or letter with a main entry common to the four major American dictionaries whose referent terms furnish a comprehensive definition, and it is not subordinate to another basic word form of the same term or classified as foreign, archaic, slang, or technical. This procedure also eliminates simple, regular, or common variations of basic word forms such as words formed with affixes, plurals, comparatives, adjectives, verb forms, etc.

The complete set of procedures used here resulted in a final sample of 123 main entry basic words in Webster's which were also main entry basic words in the other three major American dictionaries. Since these words came from a 1-percent sample, the population estimate is 12,300 (123 X 100) basic vocabulary words that were main entries in the four major American

Table A. Number and percent distribution of 1-percent sample of main entry words selected from Webster's Third International Dictionary by categorization of words

Categorization of words	Number of words		Percent distribution
	1-percent sample	Population estimate	
All main entry words[1]	2,400	240,000	100.0
Checked only in Websters's	1,040	104,000	43.3
Compound or hyphenated	775	77,500	32.3
Proper nouns	239	23,900	9.9
Abbreviations	26	2,600	1.1
Not a main entry in 3 other major dictionaries[2]	979	97,900	40.8
A main entry in all 4 dictionaries	381	38,100	15.9
Classified in Random House as:			
Technical	50	5,000	2.1
Foreign	14	1,400	.6
Slang	7	700	.3
Archaic	3	300	.1
Derived, variant, or redundant[3]	184	18,400	7.7
Basic	123	12,300	5.1

[1]Excludes main entries which were prefixes, suffixes, letters, and other than the first-listed homographs.
[2]Random House, World Book, and Funk and Wagnalls Dictionaries.
[3]Categorized by three psychologists (1 Ph.D.; 2 B.S.'s) according to specified criteria (see text). One basic word, penis, was replaced by the next closest basic word, pennant, following penis in Webster's.

dictionaires. With a population estimate of 240,000, a sample size of 2,400, and a 5.125-percent incidence of basic words in the sample, under simple random sampling statistics the population estimate of 12,300 could be expected to fall within the range of 10,200 to 14,400 with a 95-percent level of confidence (Guilford,[19] p. 168). See table A for a detailed breakdown of results of these procedures.

Criteria for Establishing Knowledge of the Basic Words

Having concluded the process of sampling and having arrived at a final list of 123 basic words, the next step was that of developing criteria for establishing knowledge of the words. This was accomplished by specifying criteria to be used in the actual test formulation and construction. Thus the whole procedure provides an *operational definition* for establishing knowledge of the words for the Basic Word Vocabulary Test (BWVT). Of course, many other operational definitions are possible and if used, could be compared with this procedure. The form used was a five-choice multiple-choice test with each item containing a stem word or phrase, the correct response, and four distractors.

Several criteria were developed to act as guidelines in the item construction. These criteria were stringently adhered to to assure consistency within and between items. Where possible, the stem was the single word being tested.

In a number of cases, however, it was advantageous to use a phrase to make the item clearer and to aid in adherence to other specified criteria.

The criteria used for constructing the correct responses were:

1. The correct responses were chosen to represent the most common meaning of the stem word as indicated by the *World Book Dictionary*.
2. The correct response was a less difficult word than the stem word; that is, it was a more frequently used word as determined by the Thorndike and Lorge[a] word count.
3. Where possible, the correct response was a single word synonym of the stem word. Where this was not feasible, a word or phrase was used to set the context of the stem word.
4. Explicit attention was given to avoiding alliteration between the stem word and the correct response in order to prevent giving clues. Where this was not feasible, distractors were chosen that also sounded like the stem word.
5. Explicit attention was given to balancing the length of words or phrases so that the correct responses were not consistently longer or shorter than the stem word and distractors.
6. Where applicable, the correct response was given in parallel form to the stem word in relation to tense and part of speech.

The following criteria were used for constructing the distractors:

1. The distractors were less difficult than the stem word and at the same or slightly lower difficulty level than the correct response.[b]
2. The distractors were in parallel form to the stem word, the correct response, and each other in regard to tense and part of speech.
3. Spelling and sound similarities were avoided between the stem word and the distractors except where necessitated because of sound or spelling similarities between the stem word and the correct response.
4. Distractors were chosen to assure that they had no relationship to any of the definitions of the stem word.
5. Effort was made to keep repetition of distractors (and correct response) to a minimum throughout the test.

With the use of the above lists of criteria, the actual test items were constructed. The items were then ordered from easiest to most difficult according to the frequency of occurrence in the Thorndike and Lorge word count. Where there was more than one stem word at any specific level, they were listed alphabetically. There were 39 words which were not listed at all in Thorndike, and they were placed alphabetically at the end of the list. This was a tentative order of difficulty to be used until empirical data could be obtained and used to order the items by level of difficulty.

The next procedure was to assign the position of the correct response (A, B, C, D, or E) to each item. The format used was that of randomly assigning within each group of 20 items an equal

---

[a] A few exceptions to this criterion exist.

1. Some items were at such a low level of difficulty (AA,A in Thorndike and Lorge) that it was impossible to construct adequate, correct responses at a lower level of difficulty; therefore, they are at the same level of difficulty. This is the case for the following stem words: *car, poor, thus, shore, advice, desert, event, stage, witness.*
2. In the item with the stem word *destitute,* the possible correct responses (other than *poor* which was avoided because earlier in the test it was a stem word) were all at a more difficult level. In this case, the word *needy,* which was at the closest level of difficulty to *destitute,* was chosen.
3. In the item with the stem word *glib,* there was a lack of any feasible correct responses at a lower level of difficulty; therefore, the word *fluent,* which is at the same level of difficulty, was used.

[b] One exception to this criterion exists, that being the item with the stem word *piñon* and correct response *pine.* Because of spelling and sound similarities between stem word and correct response, it was necessary to choose distractors with similarities in spelling and sound. Since none were available at the same or lower levels of difficulty, more difficult distractors were chosen.

number of A, B, C, D, or E correct response positions. Equalizing the number of times any particular response (A, B, C, D, or E) was the correct answer was done to compensate for the effect of any tendency among some subjects to choose particular response options merely by position. This also insured that no particular position was overselected or underselected for the correct answer, thus eliminating a possible response cue.

STANDARDIZATION

Procedure

The next step in the development of the Basic Word Vocabulary Test was that of pretesting. This process was conducted in two phases and served the purpose of collecting data on subjects' actual performances. The pretesting also provided the opportunity to obtain a critical evaluation of the test by the subjects.

In phase one of the pretesting, 15 adults varying in age (19 to 45 years), occupation (secretary, statistician, physician), and level of education (high school to M.D. and Ph.D.) from the National Center for Health Statistics were tested. The second pretesting phase was more extensive, as it included 133 subjects from a variety of sources with an age range from 11 to 61 years. The range of occupations and the educational levels of these subjects included housewives and students with as little schooling as the sixth grade and as much as the doctorate level.

About 50 of the subjects who participated in one of the two pretests were personally interviewed and asked to evaluate each item in regard to several criteria:

1. Could the correct response be logically derived even though the meaning of the stem word was not known?
2. Were there any alternatives which could be eliminated immediately because of lack of plausibility?
3. Were there any grammatical inconsistencies within an item?
4. Were there any clues given as to the correct response by spelling or sound similarities between the stem word and the right answer?
5. Were there any items in which there was more than one possible correct response?
6. Were there any other general faults such as ambiguity within an item, poor item construction, or spelling?

After each of the two pretests, this evaluative information along with the actual data on test performance was used to revise and reorder the test items from easiest to most difficult.

The development of age and educational norms on the BWVT, studying criterion-related validity by comparison with scores on standardized tests of verbal achievement and performing other test and item analyses, required that the standardization study be conducted on a rather massive scale. Help from the public schools in Fairfax County, Virginia, was obtained, and 3,100 students in grades 1 through 12 were given the second revision of the BWVT. Data from the standardization study also served as a basis for selecting items for shortened forms of the test and for making final test alterations.

Students at three elementary schools (1st-6th grades), at one junior-senior high school (7th-11th grades), and at two high schools (12th grade only) were given the test at a time that was midway in the academic year (January 1970). Parents of these children were mostly military, government, or construction employees and thus represent a diversity of parental background with respect to geographic origin, occupation, and social status.

Children in 1st and 2d grades answered only the first 45 items of the second test revision, 3d graders the first 71, 4th through 6th graders the first 99 items, and students in grades 7 through 12 took the entire test of 123 items.

In administering the test, teachers read only the instructions to the children. Since part of the purpose of this testing situation was to develop a measure of reading vocabulary level, no help was given on reading any test items or answer choices even in the primary grades. Given orally the test would not have achieved the same purpose. There was no time limit for completing the test; however, most examinees finished in about 30 minutes. The instructions also called for the examinee to guess when he did not know the answer.

To provide external criteria for validity and standardization studies of the BWVT, scores on established nationally standardized tests of verbal achievement were obtained from the children's school records. Date of birth, sex, and school grade were obtained directly from each student but were also verified from school records when questionable or incomplete responses were noted.

Sex and Grade Relationships

In scoring the tests, a formula to adjust for guessing was used. Scores were arrived at by the formula

$$S = R - \frac{W}{n-1} \quad \text{or in this particular case} \quad S = R - \frac{W}{4}$$

(S = score, R = number of right answers, W = number of wrong answers, n = number of response options). Omitted items were not counted. Frequency distributions of the corrected scores and of the standardized test scores were prepared for each grade for each sex.

Chi square was used to determine if there were any significant differences by sex on the vocabulary and standardized tests within grades. The distributions of scores for those students with both standardized and vocabulary test scores were split at their medians for each grade. There were no significant (.05 level or better) sex differences by grade for the standardized tests, and only the second grade had a significant difference (chi square = 5.76; 1 df; p = .02) on the vocabulary test, with girls scoring higher than boys. An overall test combining all grades 1-12 except grade 2 was performed next. The sex difference was not significant (chi square = 1.735; 1 df; p = .20), although girls scored slightly higher.

Table B shows how the distribution of scores through the 12 grades assumes a definite pattern. The expected relationship between grade in school and vocabulary score can be seen here.

Table B. Grade in school distributions by sex and by BWVT scores

Score range and sex	All grades	Grade in school											
		1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th
Total--	3,100	255	274	309	288	259	239	243	175	248	228	257	325
Sex													
Male---------	1,566	123	142	172	142	140	129	129	70	104	104	134	177
Female-------	1,534	132	132	137	146	119	110	114	105	144	124	123	148
Score range													
91-104-------	68	-	-	-	-	-	-	-	3	5	9	15	36
81-90--------	224	-	-	-	-	-	-	2	15	23	36	52	96
71-80--------	379	-	-	-	-	1	11	12	29	72	65	79	110
61-70--------	390	-	-	-	3	16	35	39	47	68	66	62	54
51-60--------	330	-	-	1	16	49	57	43	38	49	26	30	21
41-50--------	294	-	-	11	36	62	53	52	27	18	20	9	6
31-40--------	233	-	1	30	58	45	32	41	8	7	3	6	2
21-30--------	236	-	12	47	72	42	25	24	7	1	2	4	-
11-20--------	281	8	45	91	61	29	22	19	1	4	1	-	-
1-10---------	459	141	157	97	37	14	3	9	-	1	-	-	-
Less than 1--	206	106	59	32	5	1	1	2	-	-	-	-	-

The results of these analyses indicated that sex differences in vocabulary level by grade were not sufficiently great to warrant separate distributions by sex and that vocabulary development has a strong positive relationship with grade level attainment as expected.

Item Analyses

Item analyses were performed to determine difficulty level, internal consistency, distractor effectiveness, and sex differences for each of the 123 words on the test. Starting with the 302 tests with scores of 81-109, frequency counts of right answers were compiled for each vocabulary item. (Note: 10 adults scoring 91 or more were added to the 68 students scoring 91-104 to provide more stability in the analyses at this level.) Even for this high level group, less than 20 percent (below chance) correctly answered five of the words.

Of the 302 subjects in the 81-109 score group, only 9.5 percent chose the correct answer for the word *durbar*, which was the most difficult item on the test and was accordingly assigned the rank of 123. The 41 items which were answered correctly by less than 70 percent of the subjects in this top score group were assigned ranks on the basis of the percent passing each item. To continue the rank ordering of the items for difficulty, eight overlapping vocabulary score groups of 20 points each were used (groups scoring 71-90, 61-80, 51-70, 41-60, 31-50, 21-40, 11-30, 1-20), and the performance of the subjects within these score groups served as the basis for ranking the remaining items. These tallies made computation of percent passing each item possible and provided necessary information for checking for sex differences by items and for studying overchosen or underchosen distractors (see table C).

The percent of correct responses to an item was used to place the items in rank order within a given group. Items with greater than 70 percent correct responses were carried on to the next lower score level for ordering by difficulty level.

When the final order had been established, Spearman rank order correlations were computed to compare this order with the Thorndike-Lorge word-count order and with the order used in the second revision. In the first case, the result was a rho coefficient of .794; in the second, a rho of .964. These results indicate that using the Thorndike-Lorge ordering to select correct answer options and distractors at equal or lower frequency of occurrence than the stem word was appropriate and that the rank ordering finally arrived at should be relatively stable across different samples of subjects.

With the items arranged in order of difficulty, a measure of internal consistency was computed. Chi square values were computed for each item by comparing the number of correct answers for the item with total vocabulary score within score groups of 40-point ranges at about the 40-percent to 70-percent passing level for the item. There were 19 items with chi square values which did not reach the .01 level of significance. These were all from the top 34 most difficult items and probably reflect a lack of subjects with scores high enough (110 or better) to provide differential results. Table C summarizes these data, giving the final rank order of item difficulty, the percent passing each item in its score group, the internal consistency contingency coefficient, and estimated product-moment correlation for each item within groups with a score range of 40.

The pulling power of the four distractors for each item was evaluated by computing the percent selecting each distractor among those failing the item within the 20-point score ranges used to rank order the items for difficulty. Distractors that drew more than 40 percent or less than 10 percent of the incorrect answers were replaced. These limits were beyond two standard errors for all groups from an expected 25 percent level. There were 90 distractors outside these limits and almost one-half of the test items had one or more distractors falling outside this range. These distractors were replaced based on the initial criteria of distractor selection.

Sex differences were checked for every word, using the data groups of 20-point score ranges, to determine which items were correctly answered more often by one sex or the other. There were 25 words on the BWVT with sex differences within these restricted score ranges that had a chi square value significant at the $p = .05$ level or better (two-tail test). Fourteen were significant at the .01 level or better and the other 11 were significant at the .01-.05 level. Of these

Table C. Rank order of difficulty, percent passing, and coefficients of internal consistency within total test score groups for each BWVT word

Rank order of difficulty	Score group and basic word	Percent of students passing item	Internal consistency[1]	
			C	r
	81-109 (median 86.3, N = 302)[2]			
123	durbar	9.5	.209	.28
122	centaury	13.6	[3]	
121	seecatch	18.5	[3]	
120	jaconet	19.6	[3]	
119	redact	19.8	.358	.48
118	garganey	20.3	[3]	
117	pyrope	20.7	.216	.29
116	edacious	22.6	[3]	
115	lempira	23.8	[3]	
114	diabolo	24.5	.241	.32
113	maenad	25.0	[3]	
112	pococurante	26.5	[3]	
111	fuscous	26.6	[3]	
110	tringle	27.1	[3]	
109	flabellum	28.6	[3]	
108	larine	29.5	[3]	
107	qua	32.0	.213	.29
106	anthemion	32.9	[3]	
105	sarcophagus	33.4	.384	.51
104	dint	34.9	.281	.38
103	glib	34.9	.376	.50
102	soredium	37.2	[3]	
101	cinereous	37.7	.223	.30
100	rummer	38.8	[3]	
99	scintillate	41.1	.415	.56
98	emir	45.8	.315	.42
97	bezant	46.8	.399	.53
96	conventicle	47.0	[3]	
95	terrine	51.3	[3]	
94	pinon	52.7	.262	.35
93	abstracted	53.0	[3]	
92	fetid	54.6	.402	.54
91	whist	55.1	.325	.44
90	brob	56.3	[3]	
89	triphthong	60.1	.225	.32
88	nubilous	60.5	.221	.30
87	pomander	61.5	.260	.37
86	yew	61.9	.218	.31
85	apropos	62.5	.262	.37
84	grackle	68.7	.239	.34
83	picador	69.3	.229	.32
	71-90 (median 77.7, N = 592)[2]			
82	trajectory	50.1	.350	.50
81	mackintosh	55.4	.362	.52
80	afflux	55.9	.321	.46
79	forgo	56.8	.305	.44
78	bastion	59.8	.277	.37
77	mullet	64.4	.201	.27
76	sputum	64.4	.269	.36
75	jujube	64.9	.241	.32
74	isopod	66.8	.359	.48
73	discreet	68.2	.408	.55
	61-80 (median 70.8, N = 704)[2]			
72	destitute	47.4	.470	.63
71	mesquite	52.2	.477	.64
70	albacore	55.6	.341	.46
69	concrete	58.6	.433	.58
68	potpourri	62.4	.384	.51
67	sumac	62.9	.328	.44
66	manipulate	66.4	.577	.77
65	horde	69.1	.547	.73
	51-70 (median 62.4, N = 545)[2]			
64	console	57.1	.486	.65
63	decelerate	62.4	.559	.75
62	faction	62.5	.366	.49
61	gristle	63.2	.399	.53

[1] Internal consistency coefficients: C = contingency coefficient; r = estimated product-moment coefficient (see p. 338 of reference 19).
[2] N = number of persons.
[3] Not significant at .05 level.
[4] Not significant at .01 level.

Table C. Rank order of difficulty, percent passing, and coefficients of internal consistency within total test score groups for each BWVT word—Con.

Rank order of difficulty	Score group and basic word	Percent of students passing item	Internal consistency[1]	
			C	r
	51-70 (median 62.4, N = 545)[2]—Con.			
60	lank	64.4	.456	.61
	41-60 (median 49.3, N = 451)[2]			
59	curriculum	49.1	.524	.70
58	rafter	49.5	.392	.52
57	scavenge	51.1	.396	.53
56	thus	52.7	.419	.56
55	situate	56.9	.320	.43
54	demote	57.4	.336	.45
53	aghast	59.2	.315	.42
52	cardiac	60.2	.381	.51
51	gratify	60.4	.524	.70
50	jolt	61.3	.489	.65
49	gorge	63.1	.404	.54
48	stage	65.6	.268	.36
47	juvenile	67.7	.500	.67
46	mango	67.9	.251	.34
	31-50 (median 41.8, N = 443)[2]			
45	exclude	57.5	.596	.80
44	pennant	61.0	.470	.63
43	muff	61.7	.440	.59
42	ghetto	64.4	.541	.72
41	sassafras	65.7	.521	.70
40	gust	68.2	.547	.73
	21-40 (median 30.3, N = 417)[2]			
39	eligible	48.8	.533	.71
38	sneer	49.8	.506	.68
37	mutiny	50.5	.496	.66
36	minus	52.7	.521	.70
35	barely	53.4	.531	.71
34	tarantula	54.0	.476	.64
33	abandon	55.0	.493	.66
32	bristle	55.2	.465	.62
31	event	56.2	.566	.76
30	approach	56.3	.447	.60
29	jurist	57.4	.467	.63
28	plateau	58.4	.546	.73
27	tremendous	59.1	.500	.67
26	seamstress	67.6	.583	.78
25	dame	69.2	.403	.54
24	burlap	69.7	.553	.74
23	corps	69.9	.549	.73
	11-30 (median 19.6, N = 490)[2]			
22	tomb	49.3	.535	.72
21	advice	53.5	.596	.80
20	crisp	56.5	.399	.53
19	phony	58.5	.528	.71
18	encyclopedia	61.0	.559	.75
17	pur[illegible]	62.4	.389	.52
16	qu[illegible]	64.8	.421	.56
15	h[illegible]l	67.4	.581	.78
14	ambush	68.4	.522	.70
13	witness	69.7	.590	.79
	1-20 (median 9.7, N = 573)[2]			
12	desert	43.5	.625	.84
11	violet	44.1	.541	.72
10	mistake	47.4	.594	.80
9	stable	48.0	.608	.81
8	combat	55.6	.582	.78
7	tricycle	63.5	.672	.90
6	eagle	67.4	.669	.90
5	shower	68.6	.569	.75
4	poor	70.3	.670	.90
3	ink	72.5	.656	.88
2	shore	75.8	.611	.82
1	car	84.7	.363	.49

[1]Internal consistency coefficients: C = contingency coefficients; r = estimated product-moment coefficient (see p. 338 of reference 19).
[2]N = number of persons.

Table D. BWVT words correctly identified significantly more often by one sex in rank order of difficulty with percent of students passing item and chi square

BWVT word	Rank order of difficulty	Percent of students passing		Chi square
		Male	Female	
Words better known by males				
1. edacious	116	29.9	17.6	†4.6
2. sarcophagus	105	32.2	24.3	10.8
3. rummer	100	46.1	32.4	†4.6
4. emir	98	54.5	37.8	7.4
5. grackle	84	59.9	49.7	†5.7
6. picador	83	63.9	45.9	20.3
7. trajectory	82	75.5	20.7	137.6
8. afflux	80	62.6	49.0	11.5
9. bastion	78	52.7	39.4	13.5
10. mullet	77	64.6	51.1	13.1
11. rafter	58	59.6	42.0	12.2
12. scavenge	57	58.2	46.6	†5.1
13. jole	50	69.0	55.0	7.9
14. pennant	44	68.2	52.2	13.6
15. plateau	28	62.9	52.8	†5.1
16. ambush	14	39.9	30.5	†5.8
17. combat	8	60.1	50.2	†5.7
Words better known by females				
1. abstracted	93	45.5	62.2	9.2
2. fetid	92	48.7	60.1	†3.9
3. whist	91	45.3	60.8	14.8
4. pomander	87	41.4	50.0	†4.5
5. mackintosh	81	47.4	65.5	18.9
6. aghast	53	50.7	68.9	17.3
7. sneer	38	42.0	53.8	†6.0
8. howl	15	36.5	45.3	†4.0

†Dagger indicates significance level between .01 and .05. All others significant at .01 level or better.

words, 17 favored males, and 8 favored females, which is not a significant difference from an even split (table D). Thus while sex differences in terms of total score within grades were not great, certain specific words appear to be better known by one sex over the other at comparable levels of overall vocabulary development. Although this finding is not surprising, what is notable is that this was found for about one-fifth of all the words.

These analyses indicate that the words in the BWVT form an orderly pattern of item difficulty at various levels of attainment, the order of difficulty was very stable across samples, the items have a high degree of internal consistency except at the highest level of difficulty, and that sex differences in word knowledge for about 20 percent of the BWVT items were significant.

Grade and Age Norms

Nationally standardized test scores of verbal achievement were obtained from school records for over 70 percent of the students who had

Table E. Standardized tests from which scores were obtained from school records, by type of score, date test administered, and number and grade in school of students to whom administered

Grade in school	Standardized test	Type of score	Date administered	Number of students
12th---	SCAT[1]	10th grade: verbal-grade percentile	9/67	41
		12th grade: verbal-grade percentile	9/69	235
11th---	SCAT[1]	verbal-grade percentile	9/69	227
10th---	SCAT[1]	verbal-grade percentile	9/69	222
9th----	SCAT[1]	verbal-grade percentile	9/69	238
8th----	DAT[2]	verbal reasoning grade-sex percentile	10/69	166
7th----	CTMM[3]	language I.Q.	9/69	212
6th----	L-T[4]	verbal-grade percentile	1/70	225
5th----	L-T[4]	verbal-grade percentile	9/68	106
	CTMM[3]	language I.Q.	9/68	27
4th----	L-T[4]	verbal-grade percentile	9/69	261
3d-----	CTMM[3]	language I.Q.	9/68	29
	L-T[4]	verbal-grade percentile	1/69	120
2d-----	MRRT[5]	grade percentile	9/68	98
	CTMM[3]	language I.Q.	11/68	27
1st----	MRRT[5]	grade percentile	6/69	112
			9/69	51

[1] SCAT - School and College Ability Tests
[2] DAT - Differential Aptitude Test
[3] CTMM - California Test of Mental Maturity
[4] L-T - Lorge-Thorndike Intelligence Test
[5] MRRT - Metropolitan Reading Readiness Test

taken the BWVT. Table E lists these tests, which scores were used, when they were given, and the number of students by grade level. The means, standard deviations, and the product-moment correlation coefficients for the BWVT and standardized tests are shown in table F by grade.

Because the BWVT was too difficult for grades 1 and 2, and ages 6 and 7, these groups were not considered in the development of the normative tables. Development of age norms based on students 18 years of age and over were not attempted because these subjects had a sharp drop in mean vocabulary scores compared to the peak mean level for 17-year-olds. The BWVT means, standard deviations, and total number with BWVT test scores for all students are shown in table G by education and age.

The decision was made to construct a 23-level percentile normative table by grade with a median at the 50th percentile and an age deviation table showing a BWVT Vocabulary Development Quotient (BWVT VDQ or VDQ) with a mean of 100.0, standard deviation of 15.0, and a scale midpoint range of 72 points (plus or minus 2.40 standard deviations on the normal curve). These values correspond, respectively, to the Differential Aptitude Test grade norms and the Wechsler intelligence scales IQ means and standard deviations based on age specific means and deviations. Table H presents some psychometric properties of the grade and age norm scales. Standardized test score distributions were ordered into the same percentile intervals as shown in table H.

Table F. Means, medians, and standard deviations for the BWVT and standardized tests and correlation coefficients, by grade in school and number of students

Grade in school	Number of students	Correlation coefficient	BWVT			Standardized tests		
						Percentiles		
			Mean	Median	Standard deviation	Mean[1]	Median	Standard deviation[2]
12th	276	.756	78.0	78.2	10.8	77.3	79.0	.84
11th	227	.766	71.5	72.8	13.9	63.6	64.0	1.02
10th	222	.772	68.4	69.4	13.9	64.7	62.5	.88
9th	238	.788	65.1	66.9	14.2	70.3	70.5	.89
8th	166	.603	60.7	62.5	15.3	55.5	60.6	.98
7th	212	.664	45.5	47.8	17.5	60.6	65.0	.98
6th	225	.839	45.3	47.4	16.9	67.7	65.5	.94
5th	133	.760	38.2	40.2	17.0	54.4	54.1	.94
4th	261	.801	26.6	24.9	14.3	54.9	58.4	.86
3d	149	.461	14.4	11.6	12.2	56.2	58.6	.76
2d	125	.450	5.8	3.9	7.8	59.7	63.0	1.04
1st	163	.282	1.5	1.0	4.2	70.7	68.0	.89

[1]Percentile ranks were converted to midpoint standard scores and then the means were transformed back to percentile scores.
[2]Standard deviations are in standard score units for the standardized tests.

The basic method used in developing the normative tables was to transform the BWVT raw scores to represent a normal curve distribution of cases and then into the distributions shown in table H. However, the sample had higher means and generally lower standard deviations on the standardized tests than the expected values of 50.0 and 1.00, respectively (table F). Significant skewness in distributions were also noted on the BWVT for some education and age groups when means and medians were compared. So rather than doing a direct transformation on the sample cases, the following procedure was used to transform the BWVT raw scores.

The mean BWVT scores were computed for each percentile level of the standardized tests for each grade. The average of the mean BWVT scores in the nine percentile levels from 30 to 70 were then computed to obtain a mid-50th percentile score for each grade. These averages were plotted on a graph along with the grade medians. The mid-50th percentile values were then smoothed by inspection and judgment to obtain the "constructed" midpoint values. These values are shown below.

Grade in school	Median	Midpoint average	Constructed midpoint value
12th	77.2	69.6	69.5
11th	72.4	67.4	67.5
10th	69.2	64.6	64.5
9th	66.8	59.3	59.5
8th	62.4	[a]58.5	53.5
7th	47.0	46.8	46.5
6th	47.3	39.1	39.5
5th	40.4	[a]37.4	31.5
4th	25.4	22.3	22.5
3d	13.2	10.7	10.5
2d	4.7	4.2	4.5
1st	1.0	0.7	0.5

[a]These two values appear to be seriously out-of-line as midpoint indications and probably reflect a pertubation due to the standardized test score used in these determination.

Table G. Number of cases, Basic Word Vocabulary Test (BWVT) means, medians, and standard deviations of all sample cases by education and age

Grade in school	Number of students	Mean	Median	Standard deviation	Age	Number of students	Mean	Median	Standard deviation
12th	325	75.94	77.18	11.67	17 years	271	74.22	76.68	14.44
11th	257	70.57	72.43	14.22	16 years	250	71.22	72.17	13.57
10th	228	68.02	69.25	14.55	15 years	222	65.50	67.59	15.27
9th	248	64.65	66.77	14.32					
8th	175	60.14	62.40	15.23	14 years	221	65.18	67.56	15.53
7th	243	44.19	47.00	18.26	13 years	190	52.43	57.10	21.32
6th	239	45.29	47.27	16.72	12 years	247	44.55	47.09	17.94
5th	259	38.74	40.35	16.68					
4th	288	27.04	25.39	14.52	11 years	234	41.31	44.25	20.55
3d	309	15.32	13.25	12.54	10 years	304	34.24	35.21	19.32
2d	274	6.38	4.70	7.87	9 years	277	23.40	22.00	15.54
1st	255	1.54	1.02	4.04	8 years	264	13.21	10.50	12.03

Table H. Some psychometric properties of the BWVT grade and age normative scales

Percentile interval	Grade scale		BWVT VDQ interval	Age scale		
	Percentile level	Midpoint standard score		Midpoint	Percent of area under normal curve	
					Within	Cumulative
			135-137	136	1.07	100.0
98.5+	99	2.40	132-134	133	0.72	98.9
96.5-98.4	97	1.96	129-131	130	1.08	98.2
92.5-96.4	95	1.60	126-128	127	1.59	97.1
87.5-92.4	90	1.28	123-125	124	2.22	95.5
82.5-87.4	85	1.04	120-122	121	3.00	93.3
77.5-82.4	80	.84	117-119	118	3.89	90.3
72.5-77.4	75	.67	114-116	115	4.84	86.4
67.5-72.4	70	.52	111-113	112	5.79	81.6
62.5-67.4	65	.39	108-110	109	6.65	75.8
57.5-62.4	60	.25	105-107	106	7.65	69.2
52.5-57.4	55	.13	102-104	103	7.81	61.8
47.5-52.4	50	.00	99-101	100	8.04	54.0
42.5-47.4	45	-.13	96-98	97	7.81	46.0
37.5-42.4	40	-.25	93-95	94	7.65	38.2
32.5-37.4	35	-.39	90-92	91	6.65	30.8
27.5-32.4	30	-.52	87-89	88	5.79	24.2
22.5-27.4	25	-.67	84-86	85	4.84	18.4
17.5-22.4	20	-.84	81-83	82	3.89	13.6
12.5-17.4	15	-1.04	78-80	79	3.00	9.7
7.5-12.4	10	-1.28	75-77	76	2.22	6.7
3.5-7.4	5	-1.60	72-74	73	1.59	4.5
1.5-3.4	3	-1.96	69-71	70	1.08	2.9
0.0-1.4	1	-2.40	66-68	67	0.72	1.8
			63-65	64	1.07	1.1

Table J. Cumulative percent of sample cases across grade and age groups by normative scale values for the BWVT and grade for standard tests

Percentile level scale	Percent for grades 3-12		BWVT VDQ scale	Percent for ages 8-17
	Standard test	BWVT		
			136----	100.0
99---------	100.0	100.0	133----	98.1
97---------	97.6	97.1	130----	97.3
95---------	95.0	93.5	127----	96.2
90---------	86.7	87.3	124----	94.2
85---------	78.9	79.5	121----	91.6
80---------	70.4	71.3	118----	87.0
75---------	64.9	64.3	115----	82.1
70---------	60.0	58.9	112----	74.5
65---------	55.0	52.5	109----	66.4
60---------	48.0	48.4	106----	55.8
55---------	42.2	41.7	103----	47.4
50---------	37.6	36.5	100----	39.1
45---------	32.3	32.3	97-----	30.4
40---------	28.5	27.4	94-----	24.7
35---------	23.6	24.1	91-----	18.7
30---------	19.4	19.5	88-----	14.1
25---------	16.1	15.8	85-----	11.3
20---------	13.1	13.1	82-----	8.5
15---------	9.5	9.6	79-----	5.4
10---------	5.6	5.4	76-----	3.6
5----------	2.8	2.6	73-----	2.1
3----------	1.0	1.3	70-----	1.1
1----------	0.3	0.2	67-----	0.5
			64-----	0.2
Actual scale median------	62.8	61.3	Actual scale median----	104.0
Scale midpoint cumulative percent---	35.0	34.4	Scale midpoint cumulative percent--	34.8
Number of students--	2,109	2,109	Number of students-	2,500

The area under the normal curve for each median was then obtained in terms of standard deviation units (table G) above the constructed midpoints. The BWVT raw scores were then normalized for the upper end of the distributions from the medians. Since the distribution of cases falling below the constructed midpoints appeared to be fairly normal, the raw scores were normalized for the bottom half below the constructed midpoints of the distributions. The standard deviation values for the raw scores from the constructed midpoint values to the medians were used to complete the normalizing procedure for that portion of each grade distribution. Some score adjustments were then made within grades to provide a set of symmetrical values across grades for the full grade and normative table array. Case distributions were then compared between the normative table and the standardized test distributions by percentile intervals for each grade. The distributions were very close and thus indicated that the normalizing procedure provided a scale representative of the normal curve for a normally distributed sample.

The age normative table was constructed in the same way as the table for education except that the constructed midpoint values were derived differently. The mean educational level for each age was computed and plotted on the educational abscissa and the corresponding BWVT score was read from the ordinate. After the normative table was constructed, case distributions were made and carefully inspected. The distributions appeared to be well in line with what could be expected for this sample in terms of medians, standard deviations, and lower and upper limits of case distributions. The overall distributions for education and age are shown in table J.

Adult Norms

After completing the grades 3-12 and ages 8-17 normative tables, projections for higher educational levels and the adult population were made. Pretest results from 84 cases beyond the high school level, including 9 cases at the doctorate level, indicated a fairly orderly progression of BWVT scores for the upper educational levels. The projection was made basically through use of normative data from the Nelson-Denny Vocabulary Test[21] and, of course, on some assumptions. The Nelson-Denny is a five-choice vocabulary test with norms for 9-16 years of education based on thousands of cases. Gains in mean vocabulary scores from the 9th grade upward were computed for the two tests based on each test's 12th grade standard deviation. The relative gains in standard deviation units from 9th to 10th, 9th to 11th, and 9th to 12th

grades were then computed for each test and are as follows:

Grade change	BWVT	Nelson-Denny
9th to 12th	.86	.86
9th to 11th	.68	.60
9th to 10th	.43	.32

These relative gains were accepted as being close enough for projection purposes for constructing midpoint values to the higher grades. The Nelson-Denny relative gains were then computed for 12 through 16 years of education and applied to the BWVT. The decision was made to use the standard deviation method for obtaining score distributions within each educational level on the assumption that basic word knowledge development would be fairly normally distributed about the median at these educational levels. Since the standard deviations decreased from grade 7 upward on the BWVT, a further decrease at higher grade levels was assumed. The standard deviation was decreased from 11.67 at 12th grade to 10.0 for grades 13, 14, and 15 and then further decreased slightly for higher educational levels as shown in the normative table. Midpoint values beyond those obtained through grade 16 were also assumed to increase with a slightly greater increase from 16 to 17 (entering graduate school) than from 15 to 16 and then to show only a very small increase by educational level thereafter. Note should be taken that a gain of one score represents an increase in basic word vocabulary knowledge of a hundred words and that these values are beginning to approach the upper limits of the estimated population of basic words.

In developing the general adult normative table, figures from a U.S. Bureau of the Census report on the educational attainment of adults as of March 1970 were used to estimate the midpoint BWVT score. The median school years completed by age groups as of March 1970 are shown in the table below. The median of 12.2 years of completed education for the age group 21 years and over was used as the midpoint value for the adult population. The estimated BWVT score equivalent to this educational level was obtained by linear extrapolation between the normative

Age	Median school years completed
18-19 years	12.2
20-21 years	12.8
22-24 years	12.7
25-29 years	12.6
30-34 years	12.5
35-44 years	12.4
45-54 years	12.2
55-64 years	10.7
65-74 years	8.8
75 years and over	8.5
(21 years and over)	(12.2)

midpoints of the 12th and 13th grades which represent completed educational attainment of 11.5 and 12.5 years, which is equal to a BWVT score of 73.85. The distribution of scores on the BWVT for the Vocabulary Development Quotient (VDQ) was assumed to be similar to the distribution of the 17-year-olds. The derived VDQ distribution was then plotted on normal distribution graph paper to obtain the corresponding percentile level distribution.

These projections for adult norms are offered as a guide to what could reasonably be expected based on the methods and assumptions used. Calibration and standardization on large representative samples would provide a more desirable basis for such norms. However, these norms should be worthwhile and usable for reporting research for comparison purposes across studies until more definitive norms are established.

Other Norms

Two additional sets of tables were constructed in order to provide more precise normative values for education and age.

Grade and age equivalent values were derived graphically by connecting the grade and age midpoint normative values with straight lines between the points and then reading the BWVT score ordinate value corresponding to a given grade and age abscissa value for years and months of education and age. Adjustment factors for time of testing other than the midgrade and age periods used in the normative tables for children were also derived by the same method used for the grade and age equivalent values.

Table K. Midgrade percentile norms for the BWVT

Percentile level	Grade in school									
	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
99	45+	58+	65+	71+	77+	83+	88+	92+	95+	97+
97	40-44	53-57	61-64	67-70	73-76	79-82	84-87	88-91	91-94	93-96
95	35-39	48-52	56-60	63-66	69-72	75-78	80-83	84-87	87-90	89-92
90	30-34	43-47	52-55	59-62	65-68	71-74	76-79	81-83	84-86	86-88
85	26-29	39-42	48-51	55-58	61-64	68-70	73-75	78-80	81-83	83-85
80	23-25	36-38	45-47	52-54	58-60	65-67	71-72	76-77	79-80	81-82
75	20-22	33-35	42-44	49-51	56-57	63-64	69-70	74-75	77-78	79-80
70	18-19	30-32	39-41	47-48	54-55	61-62	67-68	72-73	75-76	77-78
65	16-17	28-29	37-38	45-46	52-53	59-60	65-66	70-71	73-74	75-76
60	14-15	26-27	35-36	43-44	50-51	57-58	63-64	68-69	71-72	73-74
55	12-13	24-25	33-34	41-42	48-49	55-56	61-62	66-67	69-70	71-72
50	10-11	22-23	31-32	39-40	46-47	53-54	59-60	64-65	67-68	69-70
45	8-9	20-21	29-30	37-38	44-45	51-52	57-58	62-63	65-66	67-68
40	7	18-19	27-28	35-36	42-43	49-50	55-56	60-61	63-64	65-66
35	6	16-17	24-26	32-34	39-41	47-48	53-54	58-59	61-62	63-64
30	5	13-15	21-23	29-31	36-38	45-46	51-52	56-57	59-60	61-62
25	4	9-12	17-20	25-28	33-35	42-44	49-50	54-55	57-58	59-60
20	3	5-8	13-16	21-24	29-32	38-41	46-48	51-53	54-56	56-58
15	0-2	3-4	8-12	16-20	24-28	34-37	42-45	47-50	50-53	52-55
10		0-2	3-7	10-14	19-23	29-33	37-41	42-46	45-49	47-51
5			0-2	3-9	12-18	22-28	30-36	35-41	38-44	40-46
3				0-2	3-11	10-21	18-29	23-24	26-37	28-39
1					0-2	0-9	0-17	0-22	0-25	0-27
Median	10.5	22.5	31.5	39.5	46.5	53.5	59.5	64.5	67.5	69.5

The six sets of normative and adjustment values are shown in tables K-P.

Use of the Tables

While an individual's earned score on the BWVT is the best estimate of his performance, the user should be aware that the standard error of measurement is about 3 raw scores on the BWVT.

The grade percentile level is read as a midpoint value. Thus if an individual's score places him in the 60th percentile level for his grade, he did about as well as or better than 60 percent of students in general do at his grade level.

The age Vocabulary Development Quotient scale is based on a mean of 100.0 and a standard deviation of 15.0 and has the same order of relationship in basic word vocabulary development interpretation as other test scores reported in

IQ terms. As an aid in qualitative interpretation the classification is shown below.

Midpoint VDQ	Qualitative classification	Percent included
130 and above	Very superior	2.9
121-127	Superior	6.8
112-118	Above average	14.5
91-109	Average	51.6
82-88	Low development	14.5
73-79	Very low development	6.8
70 and below	Deficient	2.9

Table L. Projected higher educational norms for the BWVT

Percentile level	College education[1]							
	Undergraduate				Graduate			
	Freshman	Sophomore	Junior	Senior	Master's level		Doctorate level	
	13	14	15	16	17	18	19	20+
99	97+	101+	104+	105+	108+	109+	110+	111+
97	94-96	98-100	101-103	102-104	105-107	106-108	107-109	108-110
95	90-93	94-97	97-100	98-101	101-104	102-105	103-106	104-107
90	87-89	91-93	94-96	95-97	99-100	100-101	101-102	102-103
85	85-86	89-90	92-93	93-94	97-98	98-99	99-100	100-101
80	83-84	87-88	90-91	91-92	95-96	96-97	97-98	98-99
75	81-82	85-86	88-89	89-90	93-94	95	96	97
70	79-80	83-84	86-87	88	92	94	95	96
65	78	82	85	87	91	93	94	95
60	77	81	84	86	90	92	93	94
55	76	80	83	85	89	91	92	93
50	75	79	82	84	88	90	91	92
45	74	78	81	83	87	89	90	91
40	73	77	80	82	86	88	89	90
35	72	76	79	81	85	87	88	89
30	70-71	74-75	77-78	80	83-84	86	87	88
25	68-69	72-73	75-76	78-79	81-82	85	86	87
20	66-67	70-71	73-74	76-77	79-80	83-84	84-85	85-86
15	64-65	68-69	71-72	74-75	77-78	81-82	82-83	83-84
10	61-63	65-67	68-70	71-73	75-76	79-80	80-81	81-82
5	57-60	61-64	64-67	67-70	71-74	75-78	76-79	77-80
3	54-56	58-60	61-63	64-66	68-70	71-74	72-75	73-76
1	0-53	0-57	0-60	0-63	0-67	0-70	0-71	0-72
Median	75.0	79.0	82.0	84.0	88.0	90.0	91.0	92.0
Standard deviation	10.0	10.0	10.0	9.0	9.0	8.0	8.0	8.0

[1]Highest year attending, completed, or attended to or beyond the midyear.

Table M. Midage vocabulary development quotients (VDQ) for the EWVT

VDQ[1]	Age in years									
	8	9	10	11	12	13	14	15	16	17
136	46+	55+	64+	71+	77+	83+	88+	92+	96+	98+
133	44-45	53-54	63	70	76	82	87	91	95	97
130	42-43	51-52	61-62	68-69	74-75	80-81	85-86	89-90	93-94	95-96
127	39-41	48-50	59-60	66-67	72-73	78-79	83-84	87-88	91-92	93-94
124	36-38	45-47	56-58	64-65	70-71	76-77	81-82	85-86	89-90	91-92
121	33-35	42-44	53-55	61-63	67-69	73-75	78-80	82-84	86-88	88-90
118	30-32	39-41	50-52	58-60	64-66	70-72	75-77	79-81	83-85	85-87
115	27-29	36-38	47-49	55-57	61-63	67-69	72-74	76-78	80-82	82-84
112	23-26	32-35	43-46	51-54	58-60	64-66	69-71	73-75	77-79	79-81
109	19-22	28-31	39-42	47-50	54-57	61-63	66-68	70-72	74-76	76-78
106	15-18	24-27	35-38	43-46	50-53	57-60	63-65	67-69	71-73	73-75
103	11-14	20-23	31-34	39-42	46-49	53-56	60-62	64-66	68-70	70-72
100	8-10	17-19	27-30	35-38	42-45	49-52	57-59	61-63	65-67	67-69
97	5-7	14-16	24-26	31-34	38-41	45-48	54-56	58-60	62-64	64-66
94	4	11-13	21-23	27-30	34-37	41-44	51-53	55-57	59-61	61-63
91	3	9-10	18-20	23-26	30-33	37-40	48-50	52-54	56-58	58-60
88	0-2	7-8	15-17	19-22	26-29	33-36	44-47	49-51	53-55	55-57
85		5-6	12-14	15-18	22-25	29-32	40-43	46-48	50-52	52-54
82		3-4	9-11	11-14	18-21	25-28	36-39	42-45	46-49	48-51
79		0-2	6-8	8-10	14-17	21-24	32-35	38-41	42-45	44-47
76			3-5	5-7	10-13	17-20	27-31	33-37	37-41	39-43
73			0-2	3-4	6-9	12-16	21-26	27-32	31-36	32-38
70				0-2	3-5	6-11	14-20	20-26	23-30	24-31
67					0-2	3-5	7-13	11-19	14-22	15-23
64						0-2	0-6	0-10	0-13	0-14
Median	9.0	18.0	28.5	36.5	43.5	50.5	58.0	62.0	66.0	68.0

[1] Mean = 100.0; standard deviation = 15.0.

To use the grade equivalent values, locate the individual's score in the body of table O and then read his grade and school month coordinate values. Thus if the score is 45, the grade equivalent is 7th grade, 4th month. If the score is 72 or above, table L can be used to obtain higher grade level equivalence by reference to the nearest grade level midpoint (50th percentile) value. The grade equivalent values thus correspond to BWVT scores equal to the midpoint performance at that educational level.

The age equivalent values are used and interpreted in the same way as the grade equivalent values. Thus a score of 66 is equivalent to the midpoint attainment of individuals 16 years and 5 to 9 months of age, or 16 years 7 months.

To use the grade and age score adjustments for time of testing in table P, note the time of testing and add (or subtract) the given value to the individual's BWVT raw score and use that score in the grade or age norms table.

Table N. Projected adult norms by percentile level and BWVT vocabulary development quotient

Percentile level	BWVT scores	BWVT VDQ	BWVT scores
		136------	103+
99----------	103+	133------	102
97----------	99-102	130------	100-101
95----------	95-98	127------	98-99
90----------	91-94	124------	96-97
85----------	88-90	121------	93-95
80----------	85-87	118------	90-92
75----------	83-84	115------	87-89
70----------	81-82		
65----------	79-80	112------	84-86
60----------	77-78	109------	81-83
55----------	75-76	106------	78-80
50----------	74	103------	75-77
45----------	72-73	100------	73-75
40----------	70-71	97-------	70-72
35----------	68-69	94-------	67-69
30----------	66-67	91-------	64-66
25----------	64-65	88-------	61-63
20----------	61-63	85-------	58-60
15----------	57-60	82-------	54-57
10----------	51-56	79-------	50-53
5-----------	41-50	76-------	45-49
3-----------	26-40	73-------	38-44
1-----------	0-25	70-------	30-37
		67-------	21-29
		64-------	0-20
Median	74.0		74.0

For individuals of 18 years and older the educational norms tables should be used, since basic word vocabulary development is presumed to be highly related to educational level due to selective factors as well as formal learning among adults. However, if a general adult comparison is to be made, then table N should be used.

Alternate Short Forms of the BWVT

Two alternate 40-item forms of the BWVT were developed from the pool of 123 items in the BWVT (short forms *X* and *Y*, appendix VI). Eighty items based on no significant sex differences and with less than three distractor changes were selected. A sample of 111 boys and 111 girls was drawn with equal score distributions from -8 to 104. The percent failing each of the 80 items was computed for this sample, and two pools of 40 items each were selected by cumulating the percent failing each item with those below it starting with the easiest two items to form the two pools. A second sample of 103 boys and 102 girls with equal and full score distributions was drawn for cross-validation purposes. Test papers were rescored for the two short forms for both samples. Means, standard deviations, and product-moment correlations are shown for the two forms in table Q. Score distributions were checked for each form and were fairly uniform throughout the scale length. Since the correlations between the two forms were uniformly high (.92 and above across sex and samples) and since both forms correlated .98 with the full scale BWVT for the total of 427 cases, equivalent score transformations to the BWVT were constructed. The increment in total score for each short form score was obtained by taking the average standard deviation for both forms and dividing into the standard deviation for the full scale BWVT for these cases. Then the Y intercept "a" was derived. The resultant equation is $Y' = 2.729(X) - 3.769$. Scores 0, 1, and 2 were given unit weights; then the Y' value was used for each short form score. Table R shows the BWVT full scale equivalent scores for both forms.

When the short forms are used, the equivalent full scale BWVT scores can be used in the normative tables. These forms are recommended for use when *two* short forms are needed. The special short form described next should be used when only *one* short form is needed.

Special Short Form of the BWVT

A special short form of the BWVT with 41 items (short form Z, appendix VI) was constructed by selecting those items from the full scale which correlated highest with the verbal scores on the nationally standardized tests for grades 1, 2, 3, 4, 8, and 12. The procedure used was to divide the first grade into two groups, a high and a low score group based on their standardized test

Table O. Grade and age equivalent scores for the BWVT

Grade in school	School month									
	1	2	3	4	5	6	7	8	9	10
12th	69	69	69	69	70	70	70	70	70	71
11th	66	67	67	67	68	68	68	68	68	69
10th	63	63	64	64	65	65	65	66	66	66
9th	57	58	58	59	60	60	61	61	62	62
8th	50	51	52	53	54	54	55	55	56	57
7th	43	43	44	45	46	47	47	48	49	49
6th	36	37	37	38	39	39	40	41	41	42
5th	29	29	30	31	32	32	33	34	34	35
4th	19	20	21	22	23	24	25	26	27	28
3d	6	7	8	9	10	12	13	14	16	17
Usual school month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

Age	Months of age to the nearest 15th day											
	0	1	2	3	4	5	6	7	8	9	10	11
17 years	67	67	67	68	68	68	68	68	69	69	69	69
16 years	64	64	65	65	65	66	66	66	66	66	67	67
15 years	60	60	61	61	61	62	62	62	63	63	63	64
14 years	54	55	55	56	57	57	58	58	59	59	59	60
13 years	47	48	48	49	49	50	50	51	52	52	53	54
12 years	40	40	41	41	42	43	43	44	44	45	46	46
11 years	32	33	34	34	35	36	36	37	38	38	39	39
10 years	23	24	25	26	27	28	28	29	30	30	31	32
9 years	13	14	15	16	16	17	18	19	20	21	22	22
8 years	4	4	5	6	7	8	9	10	11	11	12	13

Table P. Grade and age BWVT score adjustments for time tested from midpoint

Grade in school	3-month intervals			Age	4-month age intervals		
	Sept. 1-Nov. 30	Dec. 1-Feb. 28	Mar. 1-May 31		0-3	4-7	8-11
12th	1.0	0.0	-1.0	17 years	1.0	0.0	-1.0
11th	1.0	0.0	-1.0	16 years	1.0	0.0	-1.0
10th	2.0	0.0	-1.0	15 years	1.0	0.0	-1.0
9th	2.0	0.0	-2.0	14 years	2.0	0.0	-2.0
8th	3.0	0.0	-3.0	13 years	2.0	0.0	-2.0
7th	3.0	0.0	-3.0	12 years	2.0	0.0	-2.0
6th	3.0	0.0	-3.0	11 years	3.0	0.0	-3.0
5th	3.0	0.0	-3.0	10 years	3.0	0.0	-3.0
4th	3.0	0.0	-3.0	9 years	3.0	0.0	-3.0
3d	4.0	0.0	-3.0	8 years	4.0	0.0	-3.0

[1]To nearest 15 days of age. Thus 12 years, 3 months, and 16 days would fall in the interval 12 years, 4-7 months.

Table Q. Means, standard deviations, and product-moment correlations of full scale BWVT and short forms X and Y, by sex within samples

Item	Total	Sample 1		Sample 2	
		Male	Female	Male	Female
Number of students	427	111	111	103	102
Full scale BWVT					
Mean	47.4	48.8	48.9	46.4	45.5
Standard deviation	30.7	31.7	31.8	29.5	29.4
Short form X					
Mean	18.6	18.8	19.2	18.1	18.2
Standard deviation	11.4	11.6	11.5	11.0	11.3
Short form Y					
Mean	18.9	18.9	19.6	18.2	18.8
Standard deviation	11.1	11.1	11.4	11.0	10.8
Correlations					
Full scale BWVT and:					
Form X	.98	.98	.98	.97	.98
Form Y	.98	.98	.99	.96	.97
Form X and Form Y	.95	.94	.99	.93	.92

score distributions. Chi square was used to select the most discriminating BWVT item. Item 1 was highly significant and was selected first. Thereafter the two most discriminating items out of each block of six items arranged by item difficulty level were selected. If the chi square values were not significant at the .001 level, the next higher grade was used. The last nine items were selected based on their internal consistency chi square values (table D), again selecting two in each block of six items.

The 222 cases used in sample 1 for developing alternate test short forms were scored on the 41 selected items. Total scores were obtained first by the conventional R - W/4 scoring method and then by scoring the number of right answers through the 3d, 4th, and 5th errors and omitted items. Scoring through the 4th error and omits (4 - EO) yielded the same mean score as the R - W/4 method. The correlation coefficients between the full scale scores and the short form scores were .948 and .979 for the R - W/4 and the 4 - EO methods, respectively. The latter two correlated .965. The 4 - EO scores also correlated .961 with the scores obtained from the 82 items not in the short form scale.

Seventh grade students were selected to further study the relationships of the short form Z, scored 4 - EO, and the BWVT full scale scores obtained by the R - W/4 method and scoring the

Table R. Equivalent full scale BWVT scores for both short forms X and Y

Short form score	Full scale score	Short form scores	Full scale score
40----------	105	20----------	51
39----------	103	19----------	48
38----------	100	18----------	45
37----------	97	17----------	43
36----------	94	16----------	40
35----------	92	15----------	37
34----------	89	14----------	34
33----------	86	13----------	32
32----------	84	12----------	29
31----------	81	11----------	26
30----------	78	10----------	24
29----------	75	9----------	21
28----------	73	8----------	18
27----------	70	7----------	15
26----------	67	6----------	13
25----------	64	5----------	10
24----------	62	4----------	7
23----------	59	3----------	4
22----------	56	2----------	2
21----------	54	1----------	1
		0----------	0

NOTE: Equation: Y' = 2.729(x) - 3.769

number of right answers through the 10th error (10 - E method, described in the next section). The relationships of these three scores with the standardized test scores from the California Test of Mental Maturity (CTMM) were also considered. The items for the short form had been selected based on four other nationally standardized tests (see table E). The seventh grade had not been used in this item selection procedure, and very few students used in grades 2 and 3 had CTMM test scores. Thus these students and the CTMM test scores can be considered an independent cross-validation sample. The product-moment intercorrelations among the three BWVT test scores and with the language, nonlanguage, and full scale CTMM scores are shown in table S. The short form correlated slightly higher with the BWVT full scale 10 - E scores than with the BWVT full scale R - W/4 scores. It also correlated as well with the three CTMM scores as did the BWVT full scale R - W/4 scores. The BWVT full scale 10 - E scores correlated somewhat higher with all variables compared to the BWVT full scale R - W/4 method. These results indicate that the short form correlated as well with the criteria as the BWVT full scale and that the 10 - E method may be a slightly more accurate scoring method than the conventional R - W/4 method.

In order to check the relationship of the short form with the full scale BWVT at high score levels, 168 cases scoring from 70 through 109 on the full scale were also scored on the short form. The means were 86.18 and 30.24 for the full scale and short form, respectively. The product-moment correlation was .881, which indicates that the short form functions quite well even at the high end of the full scale.

The linear regression equations for the BWVT full scale *(Y)* from the short form Z (indicated as *X*) for the 222 persons in sample 1, for the 212 7th graders, and the high level sample of 168 persons are shown below. The general equation is:

$$Y' = r_{xy} \frac{(sy)}{(sx)} (X - \bar{X}) + \bar{Y}$$

Sample 1

$$Y' = .979 \frac{(31.758)}{(10.752)} (X - 17.87) + 48.85$$

$$Y' = .979\ (2.954X) - 2.83 = 2.892X - 2.83$$

7th grade

$$Y' = .906 \frac{(17.524)}{(5.896)} (X - 15.97) + 45.63$$

$$Y' = .906\ (2.986X) + 2.43 = 2.705X + 2.43$$

Both groups

$$Y' = .962 \frac{(25.856)}{(8.769)} (X - 16.94) + 47.27$$

$$Y' = .962\ (2.949X) - 0.79 = 2.837X - 0.79$$

High level group

$$Y' = .881 \frac{(10.063)}{(4.999)} (X - 30.24) + 86.18$$

$$Y' = .881\ (2.013X) + 32.56 = 1.773X + 32.56$$

Short form Z score	Full scale score	Short form Z score	Full scale score
41	108	20	56
40	106	19	53
39	104	18	50
38	102	17	47
37	100	16	44
36	98	15	42
35	96	14	39
34	94	13	36
33	92	12	33
32	90	11	30
31	88	10	27
30	86	9	24
29	83	8	21
28	80	7	18
27	77	6	15
26	74	5	12
25	71	4	9
24	68	3	6
23	65	2	3
22	62	1	1
21	59	0	0

The increment in the full scale scores for each form Z score was obtained by dividing the standard deviation of the full scale by the standard deviation of the short form scored 4 - EO for the combined sample 1 and the 7th graders. The Y intercept "a" was also derived. The equation is $Y' = 2.49X - 2.686$. However, when the equation was applied at the higher scoring levels, the equivalent full scale scores were higher than the mean full scale values obtained from the high level sample. The equation for this sample is $Y' = 2.013X + 25.307$. Full scale equivalents were computed by both methods and compared. Equivalent values converged at a full scale score of 86 for a short form score of 30 and then diverged for scores above and below 30. The first equation was used for deriving full scale equivalents below 30, and the second equation was used for scores 30 and above on the short form. Equivalent score transformations to the full scale are shown at left. Scores of 0 and 1 were given

Table 5. Intercorrelations of some BWVT and CTMM scores of 7th grade students, by sex

[115 male; 97 female]

Test and sex	BWVT full scale scored R - W/4	BWVT full scale scored 10 - E	CTMM language scores	CTMM non-language score	CTMM full scale score
BWVT short form scored 4 - EO[1]					
Male	.907	.947	.725	.439	.675
Female	.892	.920	.646	.426	.592
BWVT full scale scored R - W/4					
Male	...	.954	.722	.360	.633
Female	...	.944	.643	.450	.610
BWVT full scale scored 10 - E					
Male	...	...	.744	.396	.673
Female	...	...	.654	.467	.627
CTMM language score					
Male	...	...	...	.679	...
Female	...	...	...	.614	...

Variables:

[1]41 items selected in terms of correlations with standardized test scores. Scored through 4th error or omitted item.

unit weights, and then the equations were applied to all scores 2 and above.

Recommended Scoring Method

Since the BWVT was developed from a sample (1 percent) of words selected from a defined subpopulation of main entry words common to the four major American dictionaries, and since it is a five-choice test, adjusting or correcting for chance or guessing is necessary in estimating the number of words from the subpopulation that an individual would know if he were actually tested on all the words in exactly the same way as is done in the BWVT. The usual method for making adjustments for chance is to subtract the number of items incorrectly answered (wrongs) divided by one less than the number of choices from the number of items answered correctly. Omitted items are not counted. The formula for the BWVT is R - W/4 = adjusted score. This formula of course assumes that when the individual has to make a guess, any one of the five choices is equally likely to be chosen. When the individual can accurately reject any of the distractors, his chance of selecting the correct answer is better than one in five. A common observation in the BWVT pretesting, however, was that when the words were in rank order of difficulty and the individual had missed several words he would indicate that he was "just guessing." Thus it appeared that when an individual had reached his upper limit of certainty of the correct answers, he in fact began to make random guesses for most of the remaining items. It was reported even from the school testing program that the items were easy up to a point and then they suddenly became difficult for the individual. In reviewing scored test records it was very apparent that after only a few errors the remaining correctly answered items assumed a random pattern. Thus for the BWVT there is an abrupt change from known to unknown words for each individual as he reaches the upper limits of the BWVT words known by him. These observations led to trying an alternative method of scoring the BWVT. This method was to find the point where beyond a certain number of errors the number of correct answers for the remaining items would be at about the chance level of one-fifth and the score would be about equal to the adjusted score. The point beyond the first 10 errors was found to satisfy both of these conditions when tried on 265 12th grade records. The method was simply to score through the 10th error and count the number of items answered correctly below that point, not counting omitted items. Since out of 10 errors one probably guessed correctly 2.5 items, then the number of items answered correctly beyond 10 errors when corrected for guessing should be close to this figure. Another way of studying this is to compare total scores from the adjusted method with the 10-error (10 - E) method. This was done for the 427 cases used in developing short forms X and Y of the BWVT. Tables T and U present the results of this study for mean differences and the product-moment correlations for the two methods. Since the mean differences are minor and the two scores correlate .994, the 10 - E method provides essentially the same scores as the adjusted method. As can be noted in table T, the 10 - E method shows a much higher score than the adjusted method for the two intervals at 5 and below. This is because the 10 - E method does not yield a negative score. Since the norm tables place scores 0-2 in the lowest scale value for each group, this will not have any important effects.

Since the standard error for guessing can be computed from these data a further analysis was performed. Assuming that the obtained mean of 47.4 by the adjustment method is a true score for the 427 cases, guessing then occurred on the remaining 75.6 items (123-47.4). The standard error for guessing would be equal to 3.48 ($\sqrt{Npq}$ = $\sqrt{75.6}$ x .2 x .8). The standard deviation of the actual score differences was 3.87. Also the variance due to guessing increases as the adjusted scores get lower and more items are guessed at, while in the 10 - E method this variance remains constant with a standard error of only 1.41. This suggests that the 10 - E methods actually reduces the error variance due to guessing.

Table T. Number of students participating in the BWVT and comparison of 10 - E and R - W/4 scoring methods

Numbers of students	Score interval	R - W/4 Mean	10 - E Mean	Difference
427--	...	47.4	47.5	.1
43-------	91-104	95.1	95.3	.2
38-------	81-90	85.3	85.2	-.1
40-------	71-80	75.5	74.7	-.8
40-------	61-70	65.5	65.0	-.5
41-------	51-60	55.3	54.6	-.7
44-------	41-50	45.0	45.4	.4
33-------	31-40	34.7	33.7	-1.0
42-------	21-30	25.8	25.4	-.4
41-------	11-20	15.2	15.4	.2
19-------	6-10	7.8	8.1	.3
20-------	1-5	3.0	5.4	2.4
26-------	-6-0	-2.8	1.6	4.4

The 10 - E method is also much easier to use in scoring, since one stops at the 10th error; it is also much easier to use in computing the final score, since only 10 errors have to be counted plus only omitted items up to that point, which are rare inasmuch as most omitting occurs beyond the 10 - E level. When there are no omitted items, the most usual case, all one has to do is subtract 10 from the number of the 10th error item. Thus if the 10th error occurred at item 67 and there were no omits to that point, 10 is subtracted and the final score is 57.

Another final point in favor of the 10 - E method is that whole number scores are obtained at all points. In the adjusted method for the BWVT one obtains decimal scores most of the time, i.e., in R - W/4 with 62 right, 61 wrong, the adjusted score would be 62-61/4 = 62-15.25 = 46.75. The practice used in the scoring of the BWVT was to round to the nearest whole number. However since the decimal values include .25, .50, and .75, the values .25 and .50 were dropped in all cases before subtracting from the number of right answers. Since the even-odd rounding practice is hard to explain and use by most test scorers, this was not used. However, when scoring the BWVT this way, score gaps occur at every five-point interval, i.e., 120, 115, 110, 105, etc., unless some of the 123 items were omitted. The 10 - E method is the recommended procedure for scoring the full length BWVT.

The short forms are scored through the 4th error but omitted items are counted as errors and 4 subtracted from the 4th error or omitted item number. Thus if an individual made two errors and omitted one through item 15 and then missed or omitted item 16, his score would be 12 (16-4).

Table U. Product-moment correlations of 10 - E scoring method with R - W/4 scoring method by sex within samples

Score range	Total	Sample 1		Sample 2	
		Male	Female	Male	Female
Number of students----------	427	111	111	103	102
Full range----------	.994	.989	.994	.993	.998
R - W/4 Scores 51 and more----------	.972	.971	.972	.974	.971
R - W/4 Scores 50 and less----------	.970	.949	.980	.973	.976

RELIABILITY AND VALIDITY

Reliability of the BWVT

Test reliability refers to the accuracy (consistency and stability) of measurement by a test. Several estimates of the internal consistency of the BWVT were obtained from the standardization sample.

As indicated in the subsection on Item Analyses, chi square values were computed for each item within groups with a 40 score range. All chi square values were significant except for 19 items in the top 34 most difficult items. Table C also shows the contingency coefficients derived from chi square and estimated product-moment coefficients for each item. Eighty-four of the items had contingency coefficients above .300, which corresponds to product-moment coefficient estimates of .400 and above.

Internal consistency estimates of reliability were also computed at different test score levels as shown below.

BWVT score range	Number of items	Reliability
81-109----------	43	.693
71-90----------	20	.892
61-80----------	20	.889
51-70----------	20	.905
41-60----------	20	.896
31-50----------	20	.915
21-40----------	20	.950
11-30----------	20	.948
1-20----------	20	.932

These results are consistent with the item analyses data and indicate very high levels of internal consistency even within ranges of only 20 score points.

The correlation of .95 between the two short forms X and Y of the BWVT also provides a basis for estimating full scale internal consistency reliability by the Spearman-Brown formula (p. 458 of reference 19). The coefficient is .97. The 41-item short form Z also correlated .961 with the scores obtained on the remaining 82 items.

Taking the mean of 60.14 and the standard deviation of 15.23 for the 8th grade (table G), the following estimate is made. The standard error for guessing is 3.165; dividing this by 15.23, squaring the results and subtracting from 1.000 gives an estimated reliability of .957.

These results indicate that the overall internal consistency reliability of the BWVT is close to .96, which is about as reliable as a five-choice test can be, which is about .96. Assuming a standard deviation of 15.0, the standard error of measurement is 3.00 raw score points. No data are available on test-retest overtime or alternate form reliabilities.

Validity of the BWVT

Validity information indicates the degree to which a test is capable of achieving certain aims. The Standards for Educational and Psychological Tests[22] describe three aspects of validity corresponding to three aims of testing and are named criterion-related validity, content validity, and construct validity.

Criterion-related validity.—Criterion-related validity aims at estimating an individual's present or future standing on some variable of particular significance that is different from the test. It is demonstrated by comparing the test scores with one or more external variables considered to provide a direct measure of the characteristic or behavior in question. This comparison is most commonly shown by correlating the test score to a criterion measure.

The BWVT scores were correlated with several criteria obtained from the standardization sample. These were education, age, test scores on the verbal sections of five different nationally standardized tests, and test scores from five different tests of the Sequential Tests of Educational Progress (STEP) and the School and College Ability Tests (SCAT) published by the Educational Testing Service. Table F presents the 12 correlations of the BWVT with the verbal sections of the five standardized tests. The median correlation was .76. The low correlations for grades 1, 2, and 3 are consistent with the findings that the BWVT is too difficult at these levels when given as a reading test. Thus there was not enough differentiation on the BWVT to show the full range of individual differences. Also the standardized tests had been administered up to 18 months

earlier than the BWVT (see table E) which means that at the early ages of 6, 7, and 8 considerable differential changes in level of achievement had probably occurred.

Eta correlation coefficients were computed for education and age because the BWVT had a curvilinear relationship with them. The BWVT test score was the dependent variable. Eta coefficients were also computed for the STEP and SCAT tests. These test scores were the dependent variables. The correlations are shown in table V. The means of the arrays for STEP and SCAT were linear and positive. All the correlations are statistically significant at better than the .01 level

Table V. Eta correlations of BWVT with various criteria

Item	Number of students	Correlation
Educational level		
Grades 3-12	2,571	.806
Grades 3-7	1,338	.600
Grades 8-12	1,233	.361
Age		
Ages 8-17 years	2,500	.773
Ages 8-12 years	1,326	.551
Ages 13-17 years	1,174	.412
Sequential Tests of Educational Progress[1]		
Reading--Boys	99	.696
Girls	116	.756
Writing--Boys	102	.683
Girls	117	.707
Science--Boys	99	.606
Girls	119	.662
Math--Boys	98	.532
Girls	119	.515
School and college ability tests[1]		
Quantitative--Boys	104	.602
Girls	119	.577

[1]Grade 10

and are as high as, if not higher than, most correlations found between two tests specifically designed to measure the same general factor from two different nationally standardized tests. These results indicate that basic word knowledge level of attainment as measured by the BWVT is highly related to educational and age level for children and relates quite well to subject matter achievement in four areas including science and mathematics.

Content validity.--Content validity aims at determing how an individual performs at present in a universe of situations that the test situation is claimed to represent. The Standards give an example of content validity wherein a vocabulary test might be used simply as a measure of present vocabulary, the universe being all words in the language. A useful way of looking at this universe of words is to consider it to comprise a *definition* of the achievement to be measured by the test.

The BWVT test was developed from a 1-percent sample of words that were defined as basic words based on several explicitly stated criteria. The population source of basic words was also explicitly defined.

Two problems of content validity seem particulary relevant for the BWVT. The first problem is concerned with the size of the estimated population of basic words. This population was estimated based on a 1-percent sample of the estimated number of main entries in *Webster's Third International Dictionary of the English Language*. The best method for determining this population is to go through all the main entries and the other steps that were taken to obtain the full population. Efforts are underway to do this now. Until this is accomplished an estimate of the size of one's basic word vocabulary knowledge as measured by the BWVT is subject to considerable variance.

The second problem relates to how accurate the BWVT is in estimating knowledge of the population of basic words even though it may be somewhat more or less than a 1-percent sample of such words. Results from the item and the internal consistency analyses and short forms analyses indicate that the BWVT covers a wide enough range of basic word knowledge acquisition and provides reliable measurements throughout the range except possibly at the very top; hence

accurate estimates can probably be made when the population of basic words is finally determined.

The heart of the notion of content validity is that the test items constitute a representative sample of the content universe to which a generalization can be made. The procedures that were used in drawing the sample were designed with the explicit purpose of providing a basis for inferring content validity. How adequately this was accomplished must be checked by a logical evaluation of these procedures and by comparing this sample of words with other samples or the population itself.

Construct validity.— Construct validity aims at providing a basis for inferring the degree to which an individual possesses some hypothetical trait or quality (construct) presumed to be reflected in the test performance. The Standards provide an example where a vocabulary test might be used as a means of making inferences about "intellectual capacity." Construct validity is evaluated by investigating what qualities a test measures, that is, by determining the degree to which certain explanatory concepts or constructs account for performance on the test. To examine construct validity requires a combination of logical and empirical attack. A simple procedure for investigating what a test measures is to correlate it with other measures or tests. Construct validity is relevant when no existing measure is acceptable as a definitive criterion of the quality of interest, or when a test will be used in so many diverse decisions that no single criterion applies.

The logical basis from which the BWVT test was constructed was to develop a vocabulary test with content validity as a sample from an explicitly defined subpopulation of words to which the construct term "basic word vocabulary" was applied. The properties of this construct, and the behavioral domain it represents, were explicated by means of a set of specific criteria which provides its operational definition rather than by logical linguistic analyses. An assumption implicit in the construct formulation is that one's basic word vocabulary forms the core of one's larger vocabulary.

Webster's Dictionary was selected as the population from which to start because of its comprehensive coverage and its authoritative standing. Abbreviations, hyphenated words, compounds of two or more separate words, and proper nouns were included and recorded separately in the 1-percent sample count but not considered later because they were viewed as developed, perhaps fairly temporal, phrases or expressions which did not coincide with the objective of determining the fairly basic or core words in the American-English language. The other three major American dictionaries were used to arrive at a set of words on which there was a type of consensus of their relevance in the American-English language. Foreign, archaic, slang, and technical words were considered as representing specialized vocabularies. The derived, variant, or redundant words, of course, were not considered as basic words by definition.

The procedures followed to the point of differentiating basic from derived words were straightforward and mechanical. However, the development of the criteria used for differentiating basic from derived words represent considerable thought, evaluation, and deliberation. The criteria were applied by other individuals in the tedious and detailed work of sample selection, population estimation, and cross-checking the four dictionaries. The whole procedure should be given careful attention in evaluating the properties of the basic word vocabulary construct and in using these criteria, because any deviation will yield different results.

The method used in arriving at the operational definition of a basic word was logico-heuristic. The task was not begun with a well-defined or explicit idea of what constitutes a basic word but began with the general notion of a basic word vocabulary domain from which a sample could be extracted for use as a basic word vocabulary test. The general notion and the method to follow had been germinating for 10 years in thought and studies of vocabulary development. The decisions related to starting with main entries from Webster's, what to consider as a main entry word, the size of the sample (1 percent), and the major categories used in classifying the sample of main entries were made prior to actually starting the final task. The elimination of certain categories and the use of the other three dictionaires were decided on after looking at the sample of main entries. The criteria that were used for differ-

entiating basic from derived words were developed by careful study of the last 307 words and their definitions. If a word and its definitions appeared not to fit the general notion of what constitutes a basic word the question "Why not?" was asked. This led to the development of an explicit statement of how it differed from other words in the sample which had been considered as "basic." Each word and its definitions were then evaluated by the resulting criteria. The total process thus led to sequential sets of explicitly stated decision logic rules which were applied to each word.

Loevinger[23] provides three criteria for evaluating the construct validity of a test. These criteria require that the substance or content of the items shall be consistent with the proposed interpretation, that the structural relations of the items shall be consistent with the structural relations of nontest manifestations of the same trait, and that the external correlations of the test score shall not all be zero and shall be consistent with predictions based on what is known of the postulated trait. Evidence for construct validity, according to Loevinger, can be broken down into evidence that the test measures something systematically and evidence for the particular interpretation of what it measures. The degree of internal structure of the items and the magnitude of external correlations are the former, or psychometric, evidence; the nature of the structure, content of the items, and nature of the external relations are the latter, or psychological, evidence.

The procedures used in sampling, in defining the unit of measurement—the basic word—and in developing the BWVT test were used to provide assurance that the substance or content of the BWVT items are consistent with the proposed interpretation. Since it was assumed that basic word knowledge is acquired and would increase with educational attainment and age in the early years, the high correlations of the BWVT with education and age (table U) indicate that the structural relations of the BWVT items form a scale that is consistent with the structural relations of nontest manifestations of basic word knowledge development. The external correlations of the BWVT with other tests of verbal ability (tables F and U) were all high and consistent with the postulate that the BWVT measures growth in verbal ability related to reading and writing. Evidence that the BWVT measures something systematically has been presented by showing the degree of internal structure of the items by item correlations with subsections of the test at several levels of difficulty (table C), the internal consistency reliability of items within these levels (see section on reliability), and by the magnitude of the external correlations of the BWVT with other factors. Evidence on the nature of the structure of the BWVT was presented which indicated that the items form a progressive series or scale and the content of the items can be inferred to reflect the progressive acquisition of basic word knowledge in the early years. Evidence on the nature of the external relations of the BWVT was presented showing a positive relationship with growth and acquisition of knowledge in other areas.

These findings present positive evidence for the construct validity of the BWVT as a measure of the level of acquisition of basic word knowledge, vocabulary development, and more general aspects of verbal ability.

DISCUSSION

Limitations

A major limitation of the BWVT is that it is too difficult at the lower education and age range when given as a reading test. This is due mainly to limited reading ability at the early ages. Perhaps a pictorial type of vocabulary test can be developed for individual and/or group administration at the earlier ages which can be tied in with the BWVT. Orally given and responded to vocabulary tests can be given at about age 6. Pictorial materials can be used as early as age 2 as vocabulary measures. It appears that a full-range test of basic word vocabulary could be constructed for use from age 2 onward.

A larger sample of basic words would have been useful for selecting a 1-percent sample more evenly distributed in terms of difficulty levels and for selecting more words at the easiest levels for better differentiation among individuals at the lower grades and ages.

Since the standardization sample of individuals was drawn from a limited geographic area, certain biases in word difficulty levels probably

occurred compared to a nationwide sample. This sample also was well above average in verbal ability as measured by the nationally standardized tests. The median percentile score was 61.4 instead of 50.0, which is about .29 standard scores above the national level. This problem led to the need for using constructed values for the normative means and distributions rather than those provided directly by the sample. The number of cases per grade was also low for good standardization, although having a wide range of grade coverage tended to compensate for this. While standardized test scores were obtained for most of the students, they came from five different tests reflecting verbal ability. Since the content of these tests varied, their correlations with the BWVT probably varied more than if one standardized test had been available for all 12 grades, and the normative standards among these five tests probably differ quite a bit. Also only language IQ instead of grade percentile scores were available for the 7th grade and in some cases in grades 2, 3, and 5. The time interval between the administration of the standardized tests and the BWVT also varied from less than a month to almost 2½ years in some cases. Grade 12 students were obviously much higher in comparative verbal ability on the standardized tests than the other grades, and for some unknown reason the 7th grade students did not show the typical grade progression pattern above the 6th graders on the BWVT.

All these factors contributed to some uncertainty in establishing midpoint values and score distributions for the normative tables.

Growth and Development of Basic Word Vocabulary

The BWVT was developed with the notion that it could serve as an indicator of the growth and development of basic word vocabulary by education and age among children. The findings derived from the standardization sample provide some indication of the growth function of basic word vocabulary.

The fact that the words in the BWVT could be fairly evenly ordered in terms of difficulty levels and the observations and findings for the 10 - E scoring method indicate that the acquisition of knowledge about given basic words does not occur in a random fashion. If there are no theoretical reasons for assuming that one basic word should be learned earlier than another one, then exposure to, interest in, and awareness of these words may be the most important reasons for acquiring knowledge about them.

Growth with education and age.—When the BWVT score distributions are studied by education and age (tables K and M) a definite pattern can be seen. Using age for example, the range of scores is much higher above than below the midpoint for years 8 and 9 and then shifts over to a larger range below the midpoint from about age 11 and above. Thus at age 17 the lower range for a VDQ of 67 is 43 raw scores below the median, while the upper range for a VDQ of 133 is only 29 raw scores. The differences between the means and medians (table G) also show this skew pattern in distribution of scores.

The growth rate pattern by educational level is shown in figure 1. The actual median values

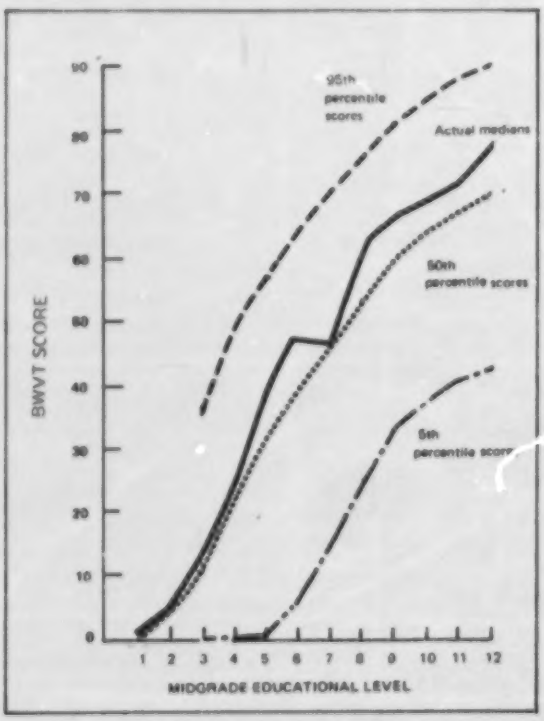

Figure 1. Basic word vocabulary growth pattern of children by educational level.

show a fairly orderly pattern of growth from grade to grade except for the 7th and 12th grades which was discussed in the previous section on limitations. The constructed normative values for the 5th, 50th, and 95th percentile levels are also shown. The growth pattern of basic word vocabulary as shown by the BWVT increases fairly rapidly up to grade 9 and then begins to slow down rapidly.

Estimated absolute size of basic word vocabulary.—An estimate of the absolute size of basic word vocabulary represented by a given score on the BWVT can be obtained by multiplying that score by 100. The percent level of attainment can be obtained by dividing the given score by 123. These estimates are, of course, subject to error. The two major sources of error are the standard error of the sample to population estimate of basic words and the standard error of measurement as reflected in the measurement reliability of the test. The standard error of the sample estimate is 1,073 and the standard error of measurement for the BWVT is about 3 raw scores or about 300 for the population estimate. Thus if an individual's raw score on the BWVT is 60, the estimated absolute size of his basic word vocabulary is 6,000 with a combined standard error of about plus or minus 1,114 words.

Another feature of the BWVT is that a given score reflects quite accurately the actual items that were passed. Thus the midpoint score of 60 for 9th grade students indicates that about half of the students at this grade level know the BWVT word item 60, which is "lank."

Applications of the BWVT

Probably the two most widespread applications of the BWVT will be in education and in personnel selection and training. Since the BWVT is easy to administer, score, and interpret, teachers and personnel officers who have reasons to believe that a basic word vocabulary is important in learning their course materials or for effectively handling a given job can give the BWVT and evaluate the individual as to his probable competence in the given situation.

The BWVT can also be used as a standardized test for evaluating growth and development of individuals and of groups. One of the advantages of the BWVT over many other standardized tests is that the content of what is being measured is easily grasped both by the individual taking the test and by the person who must interpret it and translate the findings into some action programs. Another application of the BWVT, particularly the short forms, would be in research studies. Not only the level of basic word vocabulary of the research subjects could be ascertained but experimental and control groups could be equated on this factor whenever it had a bearing on the dependent variables of interest.

Further Research and Development

The most immediate research and development need for the BWVT is to obtain more precise normative data for educational, age, and occupational groups as well as for specific school courses and subject matter areas. Efforts could also be made to extend the BWVT content notion down to about 2 years of age. Development of other basic word vocabulary tests from other samples of basic words would permit recurrent testing for evaluating growth and development during each school year. Validation studies of the relationship of the BWVT with school course grades, occupational success, and measures of general intellectual attainment can be undertaken.

The research and development implications that can be generated are almost limitless if the construct properties of a basic word vocabulary prove to be sound. Some possibilities that are opened up are for studying the relationships of the development of a basic word vocabulary with language growth and development, learning to read, effective verbal communication, and changes in symbolic thinking and reasoning as well as its relationship with general intellectual development. If a large basic word vocabulary is related to effective coping with a number of practical problems such as formal learning and occupational success, then ways and means of effectively developing a large usable basic word vocabulary should be explored.

SUMMARY AND CONCLUSION

The results of the studies to date indicate that the Basic Word Vocabulary Test provides a range of items in terms of item difficulty levels useful in printed form from about the third grade to the highest educational levels. Since pictorial and orally given vocabulary tests are used from about ages 2 to 8 years, further work should be done to extend the scale downward so that a single comprehensive vocabulary scale ranging from age 2 years to the highest level of verbal development is available for general use.

Validation studies should also be conducted with other well-known intelligence tests so that scores can be compared. Alternate forms need to be developed to allow for longitudinal studies of growth and development.

The use of a single standard of measurement of vocabulary development, suitable over a wide range of age and ability levels, by different investigators should materially aid in comparing results across studies and samples and lead to more consistent findings, advances in knowledge, and wider application of findings in practical circumstances.

The findings presented in this report indicate that the Basic Word Vocabulary Test adequately measures basic word knowledge acquisition and development. The BWVT is suitable for evaluation of individuals and for use in making group comparisons in levels of basic word knowledge attainment, growth, and development.

REFERENCES

[1]Watts, A. F.: *The language and mental development of children.* London. Harrap, 1944.

[2]McCarthy, D.: Language development in children, L. Carmichael, ed., *Manual of Child Psychology.* New York. Wiley, 1946.

[3]Smith, M. K.: Measurement of the size of general English vocabulary through the elementary grades and high school. *Genet. Psychol. Monogr.* 24:311-345, 1941.

[4]Dolch, E. W., and Leeds, D.: Vocabulary tests and depth of meaning. *J. Educ. Res.* 47:181-189, 1953.

[5]Seashore, R. H., and Eckerson, L. D.: The measurement of individual differences in general English vocabularies. *J. Educ. Psychol.* 31:14-38, 1940.

[6]Anastasi, A.: *Psychological testing.* New York. MacMillan, 1968.

[7]Terman, L. M.: The vocabulary test as a measure of intelligence. *J. Educ. Psychol.* 9:452-466, 1918.

[8]Miner, J.B.: *Intelligence in the United States.* New York. Springer, 1957

[9]Thorndike, R. L., and Gallup, G. H.: Verbal intelligence of the American adult. *J. Gen. Psychol.* 75-85, 1944.

[10]Wechsler, D.: *Manual for the Wechsler Adult Intelligence Scale.* New York. Psychological Corp., 1955.

[11]Terman, L. M., and Merrill, M. A.: *Stanford-Binet Intelligence Scale; Form L-M.* Boston. Houghton-Mifflin, 1960.

[12]Brown, J.: Vocabulary, key to communication. *Education.* 80:80-84, 1959.

[13]Funk, E.: *The way to vocabulary power and culture.* New York. Wilfred Funk, Inc., 1946.

[14]Rinsland, H. D.: *A basic vocabulary of elementary school children.* New York. MacMillan, 1945.

[15] *Webster's Third New International Dictionary of the English Language,* Unabridged. Springfield, Mass. G. & C. Merriam Co., 1961.

[16]*Random House Dictionary of the English Language,* J. Stein, ed. New York. Random House, Inc., 1966.

[17]Barnhart, C. L.: *The World Book Dictionary.* Chicago. Chicago Field Enterprises Educational Corp., 1969.

[18]*Funk and Wagnalls New Standard Dictionary of the English Language.* New York. Funk and Wagnalls Co., 1965.

[19]Guilford, J. P.: *Fundamental Statistics in Psychology and Education.* New York. McGraw-Hill, 1965.

[20]Thorndike, E. L. and Lorge, I.: *The Teacher's Word Book of 30,000 Words.* New York. Bureau of Publications, Teachers College, Columbia University, 1944.

[21]*The Nelson-Denny Reading Test.* Boston. Houghton-Mifflin Co., 1960.

[22]*Standards for Educational and Psychological Tests and Manuals.* Washington. American Psychological Association, 1966.

[23]Loevinger, J.: Objective tests as instruments of psychological theory. *Psychol. Rep.,* 1957, Mongr. Suppl. 9.

APPENDIX I

BRIEF DESCRIPTION OF DICTIONARIES

The following brief descriptions were obtained from the self-description of each dictionary used in developing the Basic Word Vocabulary Test. Entries or terms as used by these dictionaries are not main entries, that is, the alphabetic entry, but are probably used to designate all the main entries plus derived forms and subentries that are defined.

Webster's:[15] More than 450,000 entries; 2,662 pages

Funk and Wagnalls:[18] 458,000 terms defined; 2,757 pages

World Book:[17] Over 200,000 entries; 2,415 pages

Random House:[16] 260,000 entries; 1,664 pages

———— ooo ————

APPENDIX II

LISTING OF NONBASIC WORDS IN 1-PERCENT SAMPLE FROM WEBSTER'S

Derived, Variant, and Redundant Words

adiabatic
advanced
anesthetize
anywise
armiger
assortment

beck
bespangle
billionaire
bookkeeper
bootee
boxberry
bracer
bressummer
builder

catfoot
chanceful
charitable
checkered
civility
clamper
clerkly
collectanea
coloratura
comforter
communitarian
conceited
congelation
conquistador
constringent
cowled
cullender

dashen
deceptive
deconate
decorative
defiance
defrock
deliverance
despumate
dictation
diesis
dilatorily
diffidence
discontinuity
discrimination
disinfect
dispatcher
dissuasive
domination
draught
drifter

easterly
ebon
elucidate
embay
endamage
endurance
episcopalism
exalted
exhibition
exorcism
extravaganza

failing
fatalism
fiddlewood
flapdragon
floatage
follower
further

ghostly
godchild
grandchild
gunboat
gymnasiast

hagberry
hardness
howbeit
hydromedusa
hypnotize

immorality
implant
impropriety
inefficiency
infamy
inkstand
insanitary
insphere
institutionalize
insuppressible
intelligential
interstitial
irate
isostacy
isthmian

jetton

koorajong

leapfrog
leper
lethargize
liberalism
locator
logging

marrowbone
mediaeval
melodious
methodology
metrify
midwinter
milfoil
mimicry
monocular

narcotism
nominal

obscenity
occultation
offense
outbreed
overarch
overfly
overwrite

package
padodite
palpitation
pantaloon
papyraceous
parsimonious
payable
persuasive
pestilential
politesse
proa
pregnancy
provisional

radiant
rampancy
rarefy
reality
relict
reproachful
respectively
resupine
rhombohedron
robustious
rookery
rusticate

sacramental
scorching
scuta
sedulity
seepage
seismoscope
serving
severalty
silviculture
singularity
skeletonize
slaty
slumberous
smithy
spreader
strength
stylographic
subsurface
sulfatize
sunken
superstratum
supposed

threadfin
titled
toothache
tragedion
trainee
transformation
turnabout

unbelief
valedictorian
vaporize
varioloid
venturesome
visionary
visitant

warranter

zip

Technical, Archaic, Foreign, and Slang Words

Technical

alopecia
anaphase
antienzyme
antilogarithm
aposematic
architrave
aril

buccinator
buntline

carpellate
cessionary
chalaza
choripetalous
coda
concha
corody
courmarin
creosol

digitalin
dourine

epigastrium
euplastic

fantigue
fluor
forestay
formaldehyde

grippe

herpes
holmium

interplead

lymphadenitis
lytic

martensite
methyl
nasute
nullipora

orthogonal

placebo
prussiate
pygidium

retinitis
rousant

sonorant
superciliary

thionyl
tribach

vacuole
viosterol
voltage

zamindar

Archaic

amusive

lucarne

paly

Foreign

agee

byre

claught

grutch

jillet

licht

makimono

ruddock

sel

tirl
trachle

wa'
waggon
wyte

Slang

batty
benny

confab

offish

snotty
splendiferous

walloping

Words Not Main Entries In All Four Dictionaries

abembryonic
abolitionism
abruptly
academician
accelerograph
accipitrid
acephalina
acknowledgeable
acridan
actability
ada
administrable
adorno
aeration
aesthetician
affability
agal
agpaite
akepiro
alif
alkyd
allactite
allophanamide
allothimorph
allylene
alternamente
alumnal
alveon
ambassadorship
amenably
amis
amor
amphid
ampyx
anaerobian
anamite
anchimonomineral
andrite
anhungered
anionotyopy
anonymuncule

antagonistically
antiquitarian
anxiously
aphelinidae
apocha
applicableness
apting
arborary
archband
arcticize
aristoi
arrayer
arrowplate
ashery
assailment
assever
asthenobiosis
astonishable
attrist
aurinasal
autarchic
autoerotism
autoing
autotomy
avulse
axe
azon

babbling
backwoodsy
bacteriofrenic
badmash
baledos
balloonberry
banjoist
barbarousness
barmote
barns
basichromatin
bataleur
batoneer
beezer
befrogged
behite
belonite
benday
benzal
beringite
besetment
betitle
bibliolatrous
bieberite
bikini
binds
bismoclite
blackacre
blas
blazingly

blowback
bobachee
boildown
bolted
bondar
boozer
bority
bosse
bowden
brachyblast
braveness
breezeway
butterball
butyrate
byzant

caballer
calathos
calcifuge
calimanco
canniness
cantilate
capriciousness
caraibe
cartilaginous
caseinate
cassing
catalytic
catskin
cattlemen
causse
cavitoma
caza
celebrator
cembalist
cephalization
ceremonialism
changeroom
channelbill
charaban
chased
chaussure
chenfish
chidra
chiffonade
chitosan
chloroanemia
chloroma
choirwise
chondropharyngeus
choosy
chroman
chromoisomer
chrysography
churchless
circumvene
citoler
clasmatocyte

cliqueless
closefisted
closestool
cloudlet
coactive
coastways
coccosphere
cockier
codehydrogenase II
coerulignol
coho
coleoptile
collogen
colophene
columbate
comfiest
commendatore
committeeman
compensability
complanation
compromission
configurative
confusingly
conjury
consonantal
conster
contravindicate
convalescent
convertend
coracobrachialis
cornerbind
corticoafferent
cosmologist
countercheck
counterslope
countinghouse
coupled
crazyweed
creeded
crocked
crosnes
crownbeard
cruisie
cumbersomely
cupidon
cupressineous
curioso
cutbank
cyclopedist
cytogamy

dacent
daughterly
davy
deathtrap
decrassify
deducible
detacement
degreed
dehrnite
delegator
delorenzite
demonstrability
dendrophysis
dentiform
dependableness
depraver
derangeable
deridingly
des
designata
desmoneme
deuced
devilry
dibutyl
diminutival
dimpsy
dipcoat
diphtheroid
dipotassium
disally
discission
disgracious
dismask
disposability
dispositions
dissave
dissolvable
distinctiveness
diting
dividedly
dizoic
doctorhood
dogana
doltish
dopehead
doryline
dozened
dragged
drawling
dromic
drostdy
drunkery
dudleyite
dwined
dysgonic

ecstatically
editorialist
effectible
eidetic
eightfoil
ekhimi
electroanalysis
electroplexy
elementarily
elongation
embroiler
emulsifier
encephalosis
endolimax
engrained
ennobling
entad
enthrallment
entireness
entropion
epibolic
epiphytic
epizootiological
equatorially
eremitic
erogeny
escaped
escaping
esotery
essoin
estoque
etherification
etiolation
evactor
exceptionless
execrator
expiator
exploitee
eyne

fagoter
falcula
familiarization
farmhand
farruca
fatcake
federacy
feeless
feelingly
fenceless
fertileness
filopodium
flakeless
flavorpurpurin
fleshless
floodboard
flosculus
fluoroform
flyway
foldaway
footback
formularize
forslow
foundationary
freezes
fretize

frightenedly
fronting
fronts
fumigatory
fundo

gadge
galactocele
gallas
gallused
gangs
gant
gastroptosis
gayatri
geisotherm
gener
generalcy
gentlefolk
geomagnetician
geoselenic
germinator
gidgee
gilling
gimlety
glady
gliffing
glode
glossopyrosis
glutonously
gnawing
gonif
gonosome
griffonne
groundier
groutite
gul
gymnosophical
gyrocompass

habitally
habronemiasis
hairstane
halloth
hamble
handlebar
hangbird
haploid
harmal
hatband
hatchettine
haustration
headrail
hemipteroid
heptyne
heresiologist
heterachrome
hexamethylene
hexed
hideout
highveld
hinderlands
histogenesis
hitching
hiveless
hockeyist
hohlflöte
homeotic
homolateral
hooplike
husbandly
husked
hydrazobenzene
hydrocarbonate
hypaethral
hypermotility
hypochloremia
hypophysectomize
hypsometry

ichthammol
ideological
idyllium
illustrational
imitational
impartment
implementation
imposttrous
imprinting
inbearing
inconnected
inconstantness
incubational
indenter
inducing
infatuator
informalize
informingly
inheritage
inquisitively
intellectualist
intercreedal
interdictory
interjaculatory
intimation
intolerability
intrauterine
intuitionalist
inundable
inversion
invited
iodhydrin
ironize
ironback
irremissive
isard
ishikawaite
isodrin
iteming
ivybells

javali
jellybread
jocundness
joining

kampferol
kayles
keelbill
keffiyeh
kiaki
kif
kinder
kirkman
knicht
knobwood
knucklebone
kommetje
kweek
k'ri
kurveyor

labellate
labyrinthian
ladkin
lampless
lapetted
latherer
laverwort
laxist
leeve
legitimation
leontiasis
leptotene
leucoindigo
leveled
lexicostatistics
lieutenantry
lifted
ligg
liked
limbs
limnephilid
lineable
linolein
liquifiable
lithocyst
loamless
localite
locustarian
looked
lovey
lovingly

luller
lurdane
luringly
lutulent

macroblast
magniloquence
majoration
malleableness
mantellone
marimonda
marketability
mashed
massivity
matchboarding
maturenes s
matie
mattness
memoryless
meningioma
mercurialism
meriter
merocyanine
mesophere
metachromatism
metanym
metensomatosis
microfiche
microlepidopterist
microsporon
middler
millering
millable
mineralocorticoid
misadjustment
misdescriptive
misogynist
misput
mitochondrion
mockage
monaxial
monetite
mononucleosis
monotrigiyph
monumentality
moosewood
morsal
mosaicist
motory
mouthbreeder
muliebral
mower
munga
munitioneer
musaf
mycotrophic
myelopathic
myrmecophilism
mythicist
myxine

napalm
nativeness
naturally
navigational
nebby
nectarean
neighboring
nephograph
nephrosis
nestable
neurine
neuroglia
nicotinate
nightshirt
nitraniline
niyoga
nominatively
noncontagious
nonmedical
nonoptical
nontheistic
northwards
normalness
notacanthid
notharctid
notifiable
noticeably
nucleocytoplasmic
numeric

oater
obeah
obstructive
oilskinned
oleoplast
omohyoid
ontogenesis
onychosis
oppilate
optimity
orchiectomy
orthopsychiatric
osteolepiformes
osteria
outgoer
outpouching
outstep
outvalue
overpayment
overedger
oversimplify

paddleboard
paints
palatability
paleothermal
palimbacchius
palmaceous
pand
paralyzing
paradoxology
parallelogrammatic
parcellation
pards
patrilocality
paulin
pedimented
pegasoid
pellicula
peloric
penciled
pensionnaire
pentose
peracute
perfidiousness
pericarpoidal
perishableness
peroxidation
persifleur
perspectivist
petrifactive
petzite
phenomenality
philomath
phloroglucinal
photomural
phrenological
phyllozooid
physiologue
pickover
picudilla
piezochemistry
piked
pinacolone
pingle
pintadoite
piratical
platyfish
pleuracanthea
plombage
plumpness
poggy
pointes
pollenizer
polycomponent
polyene
polymicrobic
polyps
polyspore
portability
portsider
possessingly
postclypeus

practicedness
prakarana
preanimism
precipitately
precisionist
predicator
prefilter
prepalatal
presentably
presiding
presgious
pretypify
prevelar
primmer
prickier
procavlid
proctorize
profligateness
proliferous
prolongate
proneness
propalinal
properdin
prosciutto
prosternation
proportioning
protocolist
protohistoric
provolette
pseudozoea
pteridoid
pteropaedic
Puericulture
pulmonate
pulpiter
puncturation
puppetize
pursiness
purringly
putrescine
pyrazoline
pyrotechny

quadruplicity
quaters
quickbeam
quivering

rachitic
rageous
ransomer
ratherish
rattlebag
reactivity
rebute
recondemn
reconstructional
recruiting
redeemable
reech
reformade
refusible
regulant
reimbursable
relatedness
relentment
reluctate
reminiscently
remix
renting
repenter
rephotograph
repost
reproductionist
requin
resentiment
respiteless
resolutioneer
retablo
renaturation
retrocessive
reused
revokingly
revolvable
rhapontin
ribaldrous
ridgebone
rimate
risen
ritualization
robing
roestone
romanticalness
rootiest
rostralis
rowed
rottlerin
rückumlaut
ruggedize
rumpot

saddlenose
sadly
sagaciously
sainting
salmonfly
salutariness
samel
sandaled
sapin
satisfier
sauropod
scenarist
scobicular
scolding
scrapler
screenlike
scripter
scrupulousness
scutiped
sectoral
sellaite
semiround
sensile
sentimentalist
sequestree
serpolet
serriferous
shadbelly
shaping
shareef
sheaveman
shroudless
shutten
sidescraper
sig
sighted
simlin
simplified
sisalana
skipdent
slangish
slapdab
slickens
slouchily
snoopy
soapbox
soaring
sociometrist
solderless
solubilize
somer
soroche
sourberry
souths
sparger
spasmogenic
spatuliform
speechcraft
spirocyclic
spewy
spies
spindleberry
spiracular
splathering
sportful
sprug
squares
stalworth
startling
stearic
stenion
sterning

stockinged
stoury
straightways
stretchberry
strikingness
striving
strontianiferous
strutter
stuffer
stupendously
subduedly
subfauna
subjunctively
subnutrition
subsidizable
subvertical
sucken
suff
sufficientness
suggestiveness
superlunary
supportation
surfer
surrenderer
susception
susuration
swashbucklering
swilling
swingingly
swoosh
swordsplayer
symbion
symphylid
synkinesia
synonymic

tablecloth
talari
tallygalone
tamperer
tanglehead
tautness
tawery
teched
tegu
teloblast
tempestuousness
tendenz
tenorist
terai
termine
testability
tetchiness
tetrapterous
tetramethylenediamine
textus
thermoclinal
thinghood
thisness
thundercrack
tiddler
tiewig
tinsmithy
toa
toddick
tongawalla
tongueless
topeng
toucher
towable
toxigenic
transfusionist
translator
transplanter
trapball
treating
trellage
trestleman
triazo
trichoid
trihydrated
tritencephalon
trocheameter
trothless
truxilline
tubectomy
tumbled
turbiner
typecase

unadjusted
uncessant
unchristianize
unconsonant
undelude
underair
underleaf
understanded
undissected
unemployability
unexpended
unfraternal
unhang
unhelped
unimagined
unital
unliteral
unmown
unneutrality
unpossible
unrecollected
unrelievable
unscale
unsimilar
unstudious
untillable
unwandered
unweeting
upstander
uranoscopid
urva

vancourier
varnisher
velveret
vengefully
verdit
vernacularize
vertically
vestural
virtuose
vitaminology
vraicking

walkaway
wardwalk
wasteless
whatman
wiggy
winterkill
wolframine
worthily
wouldst
wreather
wronged

xeromorphic
xiphisternum

yad
yarner
yawner
yous

zwinger

Abbreviations

abn.
appd.

dol.

E.O.H.P.
extl.

fgn.
F.O.R.
F. P.O.

gl.

IM
INA

lit.

Mc
MOH
MPI

Obl
OCS
OE
OTS

prof.

refd.

SC and S
Sing.

S.S.W.

THI

U and O

Hyphenated Words and Word Compounds

absorption band
acetaldehyde ammonia
achievement test
activated sludge process
addition polymerization
addressing machine
adjutant's call
agent intellect
ahead of
air engine
all-fired
alphabet book
angle iron
angular displacement
annual bluegrass
apple leafhopper
arabonic acid
arrack punsch
art form
artificial nucleation
artist's proof
asexual spore
aspect ratio
atom smasher
average bond
azimuthal equidistant projection

backache brake
back load
bail below
balance coil
banded olive snake
barren brome grass
basal wall
basket salt
beam and scales
bearded argali
beat back
beaver dam
bed rot
bell crown
binomial expansion
biotic formation
bird's-foot violet
bitter aloes
black-backed gull
black flag
black oyster catcher
black root
blade back
blind tire
blister canker
blood pheasant
blood type
blue asbestos
blue beam
blue nevus
blur circle
boathouse rum
body cell
bois cotelet
bosun bird
bottom break
boundary layer
branch circuit
breach of trust
break and entry
breast-beating
bridge bird
bright aqua blue
bright peach
broadleaf tree
brokers' board
brood capsule
brown brush
brush arbor
bubble chamber
buck sail
buffalo currant
bulk eraser
bull oak
bull thistle
bum steer
bush doe
bustard quail
butterfly crab

cab-over
cadency mark
calendar stone
call price
calyx tooth
cameo glass
camphorated oil
canal cell
canary cedar
candlestick lily
canoe cedar
cap-and-ball
capital assets
carbonic oxide
cardinal climber
carnation rose
carrion beetle
cartridge starter
castor oil
catch colt
cellulose ester
cera flava
cervical canal
chaff-flower
charge-a-plate
chevron molding
chime maul
chip carving
chunk honey
cidar apple
cinnamon teal
circulating decimal
clam catcher
claver grass
cleaning mark
clearing bath
climb-down
clip-clop
clumphead grass
cognovit note
collective bargaining
commissioning pennant
comparative literature
complement-fixation test
composite dike
compressibility effect
conditional complex
con gusto
contact bed
content analysis
cone-bearing

contingent fund
contract bond
contraction joint
cook cheese
coordinate geometry
copper nickel
coralline limestone
core bit
corn bran
correspondence theory
cossack post
cough drop
courtesy card
cover charge
crab plover
crack arrester
cramp iron
crape jasmine
cribriform plate
crinkum-crankum
crossed belt
cross-staff
crowfoot grass
cry back
crypt-analyst
crystal vinegar
cuckoo-bread
curry powder
cushion dance
cut-and-cover
cut square

dandy fever
dark beaver
dead-smooth
declaration of war
dependent variable
detention home
dew-drink
dialectical theology
diaphragm horn
direct control
direct salesman
directional gyro
discharge coefficient
distribution box
dog cockle
donkey engine
doppio movimento
double-action
double capital
double-talk
dove's-foot
down-and-out
dragon boat festival
dray horse
dress circle
dropping bottle
dry-waxed
dual union
dumb ague
dung worm
dyer's cleavers

ear rot
earth lichen
eau de Javelle
economy coil
effective horsepower
egg albumin
elbow chair
elementary body
empire building
empty-headed
en passant
equilateral arch
equivalence zone
essential hypertension
eudemis moth
even court
evil eye
executive session
experimental psychology
express car
extended family
extreme fiber
eye appeal

face and fill
fair use
false annual ring
faucal plosive
favorite son
feather bed
fellow feeling
fender bolt
fern clubmoss
fictitious person
field kitchen
fifty-three
fighter-bomber
file signal
finder switch
fingernail clam
fire and brimstone
fire blanket
fire-retarded
fish-and-chips
fissure of Rolando
five-finger
flare gun
flat back
flax-sick
flight pay
flowering straw
fly-about
focal area
fool hay
force account
force of friction
foreign-born
forty-second
foul berth
four-poster
freak of nature
free field
freeze-drying
frogbit family
fruit bark beetle
fuel dope
full bottom
functional calculus
fur breeder
future tense

games-all
gas bacillus
gas helmet
gaudy night
gentleman-ranker
give off
glass run
glove box
going forth
gold bloc
gold import point
go to
governor's council
grade beam
grain beetle
grand father-in-law
grapple plant
gray antimony
great anteater
greater omentum
green adder's mouth
green-striped mapleworm
greeting card
grooving saw
growing zone
guardian by custom
guide card

halfhead bedstead
hand and foot
hand nut
harmonic interval
harsh-furred hare
hawkbilled
hawthorne rust
heart attack
heather ale

heavy spar
heel-and-toe watch
hell driver
helve hammer
hemp tree
herald of arms
high-angle fire
hight court
hokus-pokus
hold over
hollow newel
holy day
homogeneous reaction
honey badger
honor system
hooded milfoil
horny laminae
horseshoe bat
hot-air furnace
hotel dieu
hue circle
human ecology
house board
hum note
hunter's moon
hybrid coil
hysteresis loss

ice partridge
icterus gravis
ill at ease
imperial city
in chief
included sapwood
indefinite proposition
indirect lighting
inductive inference
infinite canon
innominate vein
inside quire
intentional species
intermittent pulse

jaal goat
jack-by-the-hedge
jet black
judgment by default
jumble sale
jus in re

kahili ginger
kick around
king ortolan
knot garden

lag fault
last clear chance
last-ditch
laughing jackass
law of the minimum
layon
leaf-and-tongue
leaf-cushion
lead arsenate
leave in
legal jointure
let down
licensed premises
lightning calculator
line space lever
listener-in
little house
livery cupboard
living language
long hundred
look down
loose scrum
lord register
lowland plover
lug chair
lumpy skin disease

magazine safety
magnesium hydroxide
magpie moth
mail clerk
make-peace
malignant hypertension
man-about-town
mandarin orange
manrope knot
many-valued
masked bobwhite
master station
meadow nematode
mean place
meat chopper
mechanical aptitude
medium chrome green
melon fruit
mesh knot
metropolitan borough
mine detector
minister plenipotentiary
minute hand
miter joint
mixtie-maxtie
modern figure
molding book
mole crab
molybdic acid
monotorial system
mooring board
moral sense
mother bulb
mother ship
mountain hare
mountain rosebay
muck soil
multiplier onion
mushroom jelly fish
mussel poisoning

naked boys
nature philosophy
negative angle
neutral conductor
night hitch
ninety-seventh
nodding lily
novel assignment
nurse's aide

obscure glass
occupational therapy
offset well
one-night stand
open-tank
ophthalmic glass
optical pyrometer
orange scale
organ neurosis
original contract
orographic rain
osmic acid
out and away
oxeye daisy
oyster agaric

package bees
paper bail
para-analgesia
parietal eye
parlor game
parrot blue
partial correlation
parting pulley
partition coefficient
pass out
passy bee
patent right
pat hand
peacock butterfly
pear thrips
pectoral ridge
pep talk
perfecting press
periodic acid
periodic comet
permanent hardness
perpetual canon
pharyngopalatine arch
phase-contrast
phosphorus trioxide

pilaster strip
pillow fight
pinch bar
pipe-band
pit canal
pitch-and-run shot
pit-pair
place name
plain clothes
plain sailing
plantage seed
plaster base
plate metal
play back
play-pretty
plug flow
plunge pool
pocket beach
poker-faced
polecat tree
pond-scum parasite
poor man's orchid
population pressure
post-office
potassium ferrocyanide
potato-leaved tomato
pound cake
pour batter
power appendant
pre-med
prerogative writ
press agent
primary alcohol
principle of association
prison camp
private bank
progressive dies
protein crystal
pseudogeneric name
psychological distance
public assistance
puddle duck
pump-action
purchase-money mortgage

quail call
quantitative inheritance
quarter butt
quenching bath
quick match
quinine flower

radiohumeral bursitis
rain barrel
raked joint
raking course
range-bred
range of accomodation
rate basis
raw water
rayless goldenrod
reasonable care
recessed arch
re-claim
red seaweed
red-tailed hawk
reference line
regimental combat team
remade milk
remittance man
residual estate
resting nucleus
reverse bearing
rift-sawed
rigging loft
right-handed rope
rind disease
ring plover
rip-rap
road brand
rocking pier
roi fainéant
rolling eight
roseate spoonbill
rose family
rubber belt
r unit
rural servitude

sales check
sand mullet
sanitary cordon
scale bark
scarf cloud
screw arbor
sea devil
sea mail
season crack
second angle
second-story man
self-analysis
self-involved
semicircular canal
semipalmated snipe
sense-datum
sepa a tilage
series parallel
set aid
settle bed
seventy-three
sex cord
shagbark hickory
shamanistic dance
shave hook
sheet chain
shield bearer
shift bid
shingle tow
ship of war
shock bump
short line
shoulder arm
shoulder-of-mutton sail
shrinkage rule
sib test
side arm
significant figures
silica gel
silicone rubber
silver ash
single transferable vote
six-wheeler
skill facet
skirmish line
sky hook
sleeper shark
sling unloader
slip stitch
sliver lapper
slugging match
small-beer
smash fixer
smooth-tongued
snake fly
snap bean
snuffbox bean
social ascidian
sodium fluosilicate
sodium propionate
soft solder
solar parallax
sou markee
sour dock
space-charge effect
spangled glass
special deposit
specific surface
speckled turtle
spencer mast
spheroidal state
spike bull
spiral spring
split-board
spoils system
spontaneous generation
spool heel
spotted nemophila
spot welding
square body
squeeze off
stained paper

standing rope
starch blue
star thistle
statute fair
steady load
steering arm
step trench
stereo camera
stick rider
stinging nettle
stinking badger
stitch aloft
stock-share lease
stomodaeal food
stoop crop
storage car
straight grain
strangulated hernia
strawberry cactus
straw man
stripe smut
stubborn disease
substitution instance
sulfonated oil
summum jus
superior conjunction
swamp ash
sweep check
sweet oil
synchronous telegraph
systemic circulation

tableau curtain
tack and half tack
tailored gardenia
take in
tall bellflower
tank barge
tap drill
tarragon oil
tassel-gentle
tea borer
teasel gourd
telephone transmitter
ten-cent store
ten-week stock
terrestrial magnetism
theater-in-the-round
then and there
third basemen
thorough-band
threshing floor
through arch
through-composed
thrush lichen
tile ore
time allowance
tittle-tattle
toilet set
token money
tossed salad
total-annular eclipse
tower clock
trade agreement
transcendental equation
traveling post office
trigonal tristetrahedron
triple-space
troop duck
truck light
true balsam
trunk call
try for point
tuck box
tungsten bronze
turntable ladder
twenty-nine
twin valve
two-gun
two-sided

umbilical cord
unfair method of competition
universal mill
upper alveolar index
uric acid
usurae usurarum
utter barrister

vacuum-tube voltmeter
vegetable leather
vegetative mutation
vestibular nerve
vicar apostolic
voice glottis
vulturine guinea fowl

wandering tattler
wantage rod
warp and woof
washer-up
water bailiff
water-ground
water purslane
water-smoke
wave band
weak feints
weathered oak
wedge gage
weigh-in
welfare factor
western ring-necked snake
whack-up
wheel scraper
whet slate
whing-ding
whip crane
white-crested touraco
white flesher
white pelican
white work
whole-time
wicket dam
wild allspice
wild peach
willow beauty
window-efficiency ratio
wing cover
wise guy
wood alloy
wood snail
word association
work-and-back
working ball
worm conveyor
wrinkle-lipped bat

yellow azalea
yellow sedge
youthful offender

zenith telescope
zero drift
zone of mobility

Proper Names

Accra
Acnida
Africanization
Afro-European
Aida trumpet
Aix
Alcyonacea
Alexandrine rat
American scoter
Andaman padauk
Anno Hegirae
Argasidae
Anthropomorphidae
Ascarops
Asurini
Athecoidea
Athiorhodaceae
Attalea
Audubon's shearwater
Aureomycin

Balahi
Balling scale
Bamba

Bantam
Barbarea
Bauré
Bdellonemertea
Bellacoola
Bignoniaceae
Blenheim spaniel
Blockflöte
Bonpa
Brahman
Branchiopoda
Brownism
Buprestidae
Burow's solution

Cagoulard
Calyceraceae
Cariama
Castalia
Central American cedar
Chamar
Cheilodactylidae
Cherokee
Chinese bush cherry
Christmas begonia
Clootie
Cocceian
Colaciales
Connecticut
Conservative Baptist
Cotonerol A
Crescentia
Cyathaspis
Cyclostoma
Cynoglossidae
Cystophora

Dahomean
Dardanian
Debye-Hückel theory
Demerara sugar
Deuterostomata
Diapensiales
Dictyonina
Dutch bargain
Dutch pink

Echinopanax
Englemann spruce beetle
Epanorthidae
Erwinia
European apple sawfly
Exogyra
Expectation week

Ferungulata
First Reader

Florida moss
Frankfurt horizontal
French vermillion
Fuchsine

Gaelicize
Geneva crystal
Girdle of Venus
Goa Bean
Goodyera
Grantia
Guatemalteean

Hamitic languages
Hebrician
Helenium
Hemigalus
Heteropidae
Hippophae
Hyenia

Iatmul
Igneri
Indian cherry
Indicatoridae
Ingaevonic

Jagatai
Jane Doe
Japan lacquer
Job's tears
Jove
Junebud

Karmatian
Kepler's Law
Keres
Keyauwee
Kingdom Hall
Kiwanian
Klemantan

Lacrima Christi
Lagos rubber
Lambeth Delft
Lancashire
Landolphia
Laudnum Bunches
Leblanc process
Linum
London brown
Loricati

Macedonian
Madagascar
Malayic
Mammalia

Mangania
Marchantia
Marquis of Queensbury rules
Maxwell triangle
Megaloceros
Megarhyssa
Melanoplus
Michaelmas
Monstera
Mormoness

Nabothian cyst
Naticidae
Nelumbium
Neo-Lamarckian
New England aster
New Yorky
Ngbaka
Nyctimene

Odacidae
Odontosyllis
Old German Baptist Brethren
Olmec
Ona
Ordines
Oxypolis

Pace egg
Pan-Hispanism
Parascaris
Paschens law
Passalus
Pathan
Pauropodidae
Pedicellinidae
Percopsis
Phallales
Philippize
Phthalogen Brilliant Blue 1F3G
Physopsis
Plectospondyli
Plymouth Rock
Polish berry
Porphyrula
Primates
Procellariiformes
Protura
Purkinje's network

Rabbinics
Receptaculida
Redjang
Reinecke acid
Rhinonyssidae
Rhizidiaceae
Richardson's grouse
Rydberg

Sabbats
Sabine
Saint Andrew's cross
Salop
Samnite
Sarcina
Satsuma ware
Savoyard
Say's phoebe
Scandahoovian
Scheuchzeriaceae
Schmidt telescope
Schopenhaureanism
Scotch stone
Scottishness
Senecio
Shelta
Sino-Japanese
Sirenidae
Solidago
Springfield
Stanford-Binet test
States' Rights
Stegosauria
Strigeidae
Sub-Atlantic
Suboscines
Supreme Court of Judicature
Svan
Swave
Sympetalae
Syphacia

Taeniarhynchus
Tegakaolo
Therapeutae
Thibet
Tibareni
Tinamiformes
Torah
Torreón
Treasurer of the Household
Turdidae
Tutchone
Tyroglyphidae

Ulotrichales
Upland cotton
Ustilago

Valparaiso
Vat Jade Green
Verona earth
Victorian hazel
Vizsla

Waiwai
Welsh groin
Western bezoar
William and Mary
Wisconsin white pine
Wittgensteinian

Yokohama fowl

———oOo———

APPENDIX III

INSTRUCTIONS FOR ADMINISTERING THE BASIC WORD VOCABULARY TEST IN A SCHOOL SITUATION

Basically the test should be administered as in any normal testing situation. Each teacher is expected to use a procedure suitable to the grade level being tested.

After handing out the tests, read to the students what they have to do (fill in name (possibly print): first name, middle initial, last name, date tested, date of birth, current grade level). Read the DIRECTIONS and the example—walk around the class to see if each student seems to understand what is required. Discourage looking at other students' answers of course! Try to insure that they answer *all* items—even if only guessing.

DO NOT READ THE TEST ITEMS TO THE STUDENTS. Do *not pronounce* any words either. Part of the function of the test is to determine literacy level; thus the ability to *read* and understand these words is part of the test's purpose. If the student cannot read, be sure the identifying information is completed on the test form.

NOTE.—Try to insure that all identifying information is correct. Note particularly the grade level and date of birth—*often the current year* will be written instead of year of birth.

Grade levels.—Each person should answer every item for his grade level. Test through the following items for each grade. If a student makes fewer than 10 errors by the end of the test, return it to him to complete more items. This will be the rare case.

Grade	Items
3d	1-55
4th	1-68
5th	1-75
6th	1-81
7th	1-87
8th	1-93
9th	1-98
10th	1-102
11th-12th	1-107
College	1-123

———ooo———

APPENDIX IV

UNTIMED THE BASIC WORD VOCABULARY TEST **FORM A**

NAME:_____ DATE TESTED: Month Day Year _____

SEX: M F DATE OF BIRTH: _____

EDUCATION: Current grade level_____. If not in school, highest grade successfully completed_____. If in college, or college graduate: Academic major_____ and highest degree earned_____.

DIRECTIONS: Select the word or phrase which has the same meaning, or most nearly the same meaning, as the underlined word. CIRCLE the letter (A, B, C, D, or E) of your answer choice. Read all answer choices before making your choice. If you do not know the correct answer–guess!

EXAMPLE

a boy is a
- A. lip
- B. bush
- C. rock
- (D) child
- E. horse

1. a car is to
   - A. start fires with
   - B. eat on
   - C. take pictures with
   - D. ride in
   - E. draw with

2. the shore is by the
   - A. sea
   - B. train
   - C. letter
   - D. table
   - E. paper

3. ink is used to
   - A. walk on
   - B. write with
   - C. cut with
   - D. serve with
   - E. stand on

4. poor means having very little
   - A. money
   - B. hair
   - C. sun
   - D. time
   - E. snow

5. shower:
   - A. field
   - B. doctor
   - C. rain
   - D. post
   - E. battle

6. eagle:
   - A. family
   - B. cup
   - C. lake
   - D. coat
   - E. bird

7. a tricycle is to
   - A. hear with
   - B. ride on
   - C. lie on
   - D. walk under
   - E. see through

8. combat:
   - A. point
   - B. report
   - C. fight
   - D. start
   - E. admit

9. stable:
   - A. husband
   - B. window
   - C. ocean
   - D. building
   - E. street

10. a mistake is something done
    A. first
    B. wrong
    C. next
    D. often
    E. alone

11. violet:
    A. plant
    B. ship
    C. story
    D. home
    E. river

12. a desert is very
    A. kind
    B. strong
    C. dry
    D. brave
    E. dark

13. a witness is a person who
    A. trains animals
    B. bakes cakes
    C. observes actions
    D. fixes machines
    E. grows wheat

14. ambush:
    A. attitude
    B. address
    C. artist
    D. attack
    E. authority

15. howl:
    A. roar
    B. design
    C. propose
    D. depart
    E. succeed

16. quit:
    A. hope
    B. trade
    C. learn
    D. take
    E. stop

17. puss:
    A. factory
    B. devil
    C. exercise
    D. camp
    E. cat

18. encyclopedia:
    A. woman
    B. reason
    C. nation
    D. food
    E. book

19. phony:
    A. tough
    B. neutral
    C. vivid
    D. fake
    E. hasty

20. crisp:
    A. safe and warm
    B. hard and thin
    C. deep and wide
    D. soft and short
    E. round and heavy

21. advice:
    A. record
    B. visit
    C. bridge
    D. opinion
    E. minute

22. tomb:
    A. baby
    B. market
    C. grave
    D. roof
    E. scale

23. corps:
    A. angry teacher
    B. tired worker
    C. sick animal
    D. military unit
    E. special vacation

24. burlap:
    A. tunnel
    B. medicine
    C. soil
    D. engine
    E. fabric

25. dame:
    A. lady
    B. voice
    C. bay
    D. party
    E. region

26. a seamstress is a woman who
    A. writes
    B. sews
    C. sings
    D. paints
    E. bakes

27. tremendous:
    A. serious
    B. enormous
    C. religious
    D. famous
    E. precious

28. plateau:
    A. large post
    B. big present
    C. kind prince
    D. great play
    E. high plain

29. a jurist is an expert in
    A. law
    B. business
    C. weather
    D. art
    E. history

30. approach means to com
    A. through
    B. with
    C. into
    D. between
    E. near

31. event
A. occasion
B. temper
C. notion
D. monument
E. explanation

32. bristle:
A. difficult problem
B. stiff hair
C. official order
D. sweet fruit
E. broad stream

33. abandon:
A. look over
B. hold on
C. lift up
D. fall down
E. give up

34. tarantula:
A. grape
B. highway
C. button
D. spider
E. verse

35. barely:
A. generally
B. scarcely
C. completely
D. especially
E. gradually

36. minus:
A. about
B. through
C. across
D. less
E. into

37. mutiny:
A. stranger
B. puzzle
C. rebellion
D. lemon
E. tenant

38. sneer:
A. listen with interest
B. practice with care
C. look with scorn
D. lift with ease
E. dance with joy

39. eligible:
A. lonesome
B. careless
C. qualified
D. inferior
E. profound

40. a gust is a sudden
A. rush of wind
B. act of duty
C. increase of pain
D. loss of friends
E. need of money

41. sassafras:
A. tree
B. wave
C. egg
D. board
E. yard

42. a ghetto is a section of a
A. story
B. wall
C. church
D. city
E. garden

43. muff:
A. water heater
B. hand warmer
C. glass cleaner
D. paint dryer
E. wood burner

44. pennant:
A. route
B. flag
C. journal
D. speech
E. leader

45. exclude:
A. educate
B. excite
C. eliminate
D. encourage
E. ensure

46. mango:
A. fruit
B. army
C. uncle
D. star
E. stone

47. juvenile:
A. haunted
B. youthful
C. intimate
D. favorable
E. unable

48. stage:
A. step in a process
B. tear in a net
C. condition in a treaty
D. light in a tower
E. article in a newspaper

49. gorge:
A. circle
B. chain
C. valley
D. hall
E. queen

50. jolt:
A. justify
B. join
C. judge
D. jar
E. journey

51. gratify:
A. heat
B. shout
C. hope
D. charge
E. please

52. cardiac means of the
- A. arm
- B. feet
- C. heart
- D. legs
- E. head

53. aghast:
- A. similar
- B. modern
- C. lucky
- D. limited
- E. terrified

54. demote:
- A. invite
- B. reduce
- C. stroke
- D. pause
- E. excuse

55. situate:
- A. wear
- B. add
- C. take
- D. place
- E. study

56. thus:
- A. not
- B. too
- C. why
- D. so
- E. do

57. scavenge:
- A. check certificates
- B. change residence
- C. support legislation
- D. divide inheritance
- E. remove rubbish

58. rafter:
- A. angel
- B. canal
- C. beam
- D. lamb
- E. trunk

59. curriculum:
- A. school of fish
- B. collection of pictures
- C. type of window
- D. range of mountains
- E. program of studies

60. lank:
- A. slender
- B. grateful
- C. musical
- D. lively
- E. rare

61. gristle:
- A. fortitude
- B. cartilage
- C. graphite
- D. arrogance
- E. overture

62. faction:
- A. dinner
- B. blood
- C. group
- D. passage
- E. hill

63. decelerate means reducing
- A. velocity
- B. disorder
- C. enthusiasm
- D. hazards
- E. expenditures

64. console:
- A. compare
- B. conclude
- C. comfort
- D. command
- E. collect

65. horde:
- A. circle
- B. shade
- C. word
- D. crowd
- E. sand

66. manipulate:
- A. reserve
- B. devote
- C. handle
- D. inquire
- E. introduce

67. sumac:
- A. prayer
- B. reward
- C. shrub
- D. doctrine
- E. porch

68. potpourri:
- A. tailor
- B. embassy
- C. schooner
- D. medley
- E. parson

69. concrete:
- A. clean
- B. mean
- C. low
- D. nice
- E. real

70. albacore:
- A. tire
- B. soldier
- C. box
- D. fish
- E. stick

71. mesquite:
- A. office
- B. tree
- C. fire
- D. store
- E. gate

72. destitute:
- A. respectful
- B. divine
- C. urgent
- D. slippery
- E. needy

73. discreet:
A. fragrant
B. prudent
C. unpleasant
D. radiant
E. gallant

74. isopod:
A. advertisement
B. edifice
C. meteorite
D. philanthropist
E. crustacean

75. jujube:
A. candy
B. echo
C. poem
D. harvest
E. brick

76. sputum:
A. saloon
B. sickle
C. shawl
D. saliva
E. sermon

77. mullet:
A. bird
B. ball
C. dog
D. stone
E. fish

78. bastion:
A. fortification
B. qualification
C. appropriation
D. legislation
E. illustration

79. forgo:
A. represent
B. sacrifice
C. justify
D. determine
E. display

80. afflux:
A. flow
B. fool
C. fall
D. fly
E. floor

81. mackintosh:
A. raincoat
B. tractor
C. honeybee
D. cartoon
E. saucepan

82. trajectory:
A. curved path
B. ill health
C. bold type
D. glorious spirit
E. strong back

83. picador:
A. statesman
B. horseman
C. conductor
D. sultan
E. fisherman

84. grackle:
A. chipmunk
B. pumpkin
C. strawberry
D. blackbird
E. caterpillar

85. apropos:
A. instructive
B. respectful
C. forbidden
D. pertinent
E. dominant

86. yew:
A. evergreen tree
B. dismal day
C. shabby house
D. twisty road
E. frightful dream

87. a pomander is
A. magnetic
B. explosive
C. aromatic
D. frail
E. rotten

88. nubilous:
A. cloudy
B. incredible
C. liberal
D. spiritual
E. ragged

89. a triphthong is a combination of three
A. fossils
B. cables
C. diagrams
D. vowels
E. atoms

90. brob:
A. jail
B. pouch
C. tax
D. spike
E. cavern

91. whist:
A. captain
B. game
C. soul
D. finger
E. rock

92. fetid:
A. exhausted
B. stinking
C. pathetic
D. meager
E. insane

93. abstracted:
A. unmoved
B. insulated
C. preoccupied
D. dominated
E. devastated

94. pinon:
A. piano
B. pioneer
C. pine
D. pinch
E. pint

95. terrine:
A. knife
B. railway
C. chicken
D. wagon
E. vessel

96. conventicle:
A. major enemy
B. royal gentleman
C. impossible question
D. sharp object
E. secret meeting

97. bezant:
A. hotel
B. coin
C. mill
D. harbor
E. desk

98. an emir is an Arabian
A. drink
B. farmer
C. chief
D. song
E. horse

99. scintillate:
A. develop
B. whistle
C. ruin
D. breathe
E. flash

100. rummer:
A. union
B. knight
C. coal
D. shoe
E. glass

101. cinereous:
A. ashen
B. precise
C. bashful
D. valiant
E. nimble

102. soredium:
A. cell
B. building
C. convention
D. powder
E. funeral

103 glib:
A. unaware
B. fluent
C. reluctant
D. philosophical
E. inquisitive

104. dint:
A. supply
B. wish
C. force
D. price
E. demand

105. sarcophagus:
A. coffin
B. insect
C. interview
D. wharf
E. mushroom

106. anthemion:
A. department
B. remedy
C. ornament
D. punishment
E. election

107. qua:
A. during
B. as
C. while
D. if
E. when

108. larine means like a
A. sleigh
B. mirror
C. wreath
D. gull
E. matron

109. flabellum:
A. fort
B. frost
C. fan
D. file
E. flock

110. tringle:
A. wave
B. bench
C. light
D. rod
E. mirror

111. fuscous:
A. outrageous
B. austere
C. contagious
D. swarthy
E. eloquent

112. pococurante:
A. ignorant
B. frightened
C. distinguished
D. indifferent
E. dainty

113. maenad:
A. insidious laugh
B. picturesque scene
C. unscrupulous master
D. caustic reply
E. frenzied woman

114. diabolo:
A. bed
B. dance
C. game
D. mark
E. record

115. lempira:
A. chair
B. money
C. salt
D. earth
E. music

116. edacious:
A. auspicious
B. voracious
C. malicious
D. atrocious
E. luscious

117. pyrope:
A. reptile
B. heather
C. slogan
D. mantle
E. garnet

118. garganey:
A. hero
B. frame
C. bush
D. skirt
E. duck

119. redact:
A. edit
B. invert
C. convict
D. inherit
E. afflict

120. jaconet:
A. tribe
B. gift
C. port
D. treaty
E. cloth

121. seecatch:
A. shield
B. scheme
C. settlement
D. seal
E. sport

122. centaury:
A. herb
B. signal
C. torch
D. payment
E. fortress

123. durbar:
A. quarrel
B. sailor
C. audience
D. painting
E. province

———— ○○○ ————

APPENDIX V

SCORING METHOD FOR FULL SCALE BASIC WORD VOCABULARY TEST AND ANSWER KEY

Recommended scoring method.—Simply score through the 10th error and subtract 10 plus omitted items up to the 10 - E item from the item number of the 10th error. Thus if an individual's 10th error occurred on item 60 and he had omitted two items below 60, his score would be 60-(10+2) or 48.

Page 54

1 - D	
2 - A	
3 - B	
4 - A	
5 - C	
6 - E	
7 - B	
8 - C	
9 - D	

Page 55

10 - B	21 - D
11 - A	22 - C
12 - C	23 - D
13 - C	24 - E
14 - D	25 - A
15 - A	26 - B
16 - E	27 - B
17 - E	28 - E
18 - E	29 - A
19 - D	30 - E
20 - B	

Page 56

31 - A	42 - D
32 - B	43 - B
33 - E	44 - B
34 - D	45 - C
35 - B	46 - A
36 - D	47 - B
37 - C	48 - A
38 - C	49 - C
39 - C	50 - D
40 - A	51 - E
41 - A	

Page 57

52 - C	63 - A
53 - E	64 - C
54 - B	65 - D
55 - D	66 - C
56 - D	67 - C
57 - E	68 - D
58 - C	69 - E
59 - E	70 - D
60 - A	71 - B
61 - B	72 - E
62 - C	

Page 58

73 - B	84 - D
74 - E	85 - D
75 - A	86 - A
76 - D	87 - C
77 - E	88 - A
78 - A	89 - D
79 - B	90 - D
80 - A	91 - B
81 - A	92 - B
82 - A	93 - C
83 - B	

Page 59

94 - C	105 - A
95 - E	106 - C
96 - E	107 - B
97 - B	108 - D
98 - C	109 - C
99 - E	110 - D
100 - E	111 - D
101 - A	112 - D
102 - A	113 - E
103 - B	114 - C
104 - C	

Page 60

115 - B
116 - B
117 - E
118 - E
119 - A
120 - E
121 - D
122 - A
123 - C

APPENDIX VI

SHORT FORMS X, Y, AND Z

UNTIMED **THE BASIC WORD VOCABULARY TEST** **SHORT FORM X**

NAME:_____ DATE TESTED: Month Day Year

SEX: M F DATE OF BIRTH:_____

EDUCATION: Current grade level _____. If not in school, highest grade successfully completed _____. If in college, or college graduate: Academic major _____ and highest degree earned _____.

DIRECTIONS: Select the word or phrase which has the same meaning, or most nearly the same meaning, as the underlined word. CIRCLE the letter (A, B, C, D, or E) of your answer choice. Read all answer choices before making your choice. If you do not know the correct answer—guess!

EXAMPLE

a boy is a
- A. lip
- B. bush
- C. rock
- (D) child
- E. horse

1. a car is to
   - A. start fires with
   - B. eat on
   - C. take pictures with
   - D. ride in
   - E. draw with

2. poor means having very little
   - A. money
   - B. hair
   - C. sun
   - D. time
   - E. snow

3. shower:
   - A. field
   - B. doctor
   - C. rain
   - D. post
   - E. battle

4. stable:
   - A. husband
   - B. window
   - C. ocean
   - D. building
   - E. street

5. violet:
   - A. plant
   - B. ship
   - C. story
   - D. home
   - E. river

6. a desert is very
   - A. kind
   - B. strong
   - C. dry
   - D. brave
   - E. dark

7. quit:
   - A. hope
   - B. trade
   - C. learn
   - D. take
   - E. stop

8. crisp:
   - A. safe and warm
   - B. hard and thin
   - C. deep and wide
   - D. soft and short
   - E. round and heavy

9. burlap:
   - A. tunnel
   - B. medicine
   - C. soil
   - D. engine
   - E. fabric

10. dame:
    A. lady
    B. voice
    C. bay
    D. party
    E. region

11. a seamstress is a woman who
    A. writes
    B. sews
    C. sings
    D. paints
    E. bakes

12. a jurist is an expert in
    A. law
    B. business
    C. weather
    D. art
    E. history

13. event:
    A. occasion
    B. temper
    C. notion
    D. monument
    E. explanation

14. bristle:
    A. difficult problem
    B. stiff hair
    C. official order
    D. sweet fruit
    E. broad stream

15. barely:
    A. generally
    B. scarcely
    C. completely
    D. especially
    E. gradually

16. minus:
    A. about
    B. through
    C. across
    D. less
    E. into

17. a gust is a sudden
    A. rush of wind
    B. act of duty
    C. increase of pain
    D. loss of friends
    E. need of money

18. a ghetto is a section of a
    A. story
    B. wall
    C. church
    D. city
    E. garden

19. exclude:
    A. educate
    B. excite
    C. eliminate
    D. encourage
    E. ensure

20. mango:
    A. fruit
    B. army
    C. uncle
    D. star
    E. stone

21. gorge:
    A. circle
    B. chain
    C. valley
    D. hall
    E. queen

22. situate:
    A. wear
    B. add
    C. take
    D. place
    E. study

23. curriculum:
    A. school of fish
    B. collection of pictures
    C. type of window
    D. range of mountains
    E. program of studies

24. gristle:
    A. fortitude
    B. cartilage
    C. graphite
    D. arrogance
    E. overture

25. decelerate means reducing
    A. velocity
    B. disorder
    C. enthusiasm
    D. hazards
    E. expenditures

26. manipulate:
    A. reserve
    B. devote
    C. handle
    D. inquire
    E. introduce

27. sumac:
    A. prayer
    B. reward
    C. shrub
    D. doctrine
    E. porch

28. concrete:
    A. clean
    B. mean
    C. low
    D. nice
    E. real

29. discreet:
    A. fragrant
    B. prudent
    C. unpleasant
    D. radiant
    E. gallant

30. isopod:
    A. advertisement
    B. edifice
    C. meteorite
    D. philanthropist
    E. crustacean

31. sputum:
    A. saloon
    B. sickle
    C. shawl
    D. saliva
    E. sermon

32. forgo:
    A. represent
    B. sacrifice
    C. justify
    D. determine
    E. display

33. apropos:
    A. instructive
    B. respectful
    C. forbidden
    D. pertinent
    E. dominant

34. yew:
    A. evergreen tree
    B. dismal day
    C. shabby house
    D. twisty road
    E. frightful dream

35. conventicle:
    A. major enemy
    B. royal gentleman
    C. impossible question
    D. sharp object
    E. secret meeting

36. scintillate:
    A. develop
    B. whistle
    C. ruin
    D. breathe
    E. flash

37. glib:
    A. unaware
    B. fluent
    C. reluctant
    D. philosophical
    E. inquisitive

38. flabellum:
    A. fort
    B. frost
    C. fan
    D. file
    E. flock

39. pyrope:
    A. reptile
    B. heather
    C. slogan
    D. mantle
    E. garnet

40. durbar:
    A. quarrel
    B. sailor
    C. audience
    D. painting
    E. province

UNTIMED THE BASIC WORD VOCABULARY TEST **SHORT FORM Y**

Month Day Year

NAME:_____ DATE TESTED: _____

SEX: M F DATE OF BIRTH: _____

EDUCATION: Current grade level_____. If not in school, highest grade successfully completed_____. If in college, or college graduate: Academic major _____ and highest degree earned _____.

DIRECTIONS: Select the word or phrase which has the same meaning, or most nearly the same meaning, as the underlined word. CIRCLE the letter (A, B, C, D, or E) of your answer choice. Read all answer choices before making your choice. If you do not know the correct answer–guess!

EXAMPLE

a boy is a
- A. lip
- B. bush
- C. rock
- (D) child
- E. horse

1. the shore is by the
   - A. sea
   - B. train
   - C. letter
   - D. table
   - E. paper

2. ink is used to
   - A. walk on
   - B. write with
   - C. cut with
   - D. serve with
   - E. stand on

3. eagle:
   - A. family
   - B. cup
   - C. lake
   - D. coat
   - E. bird

4. a tricycle is to
   - A. hear with
   - B. ride on
   - C. lie on
   - D. walk under
   - E. see through

5. a mistake is something done
   - A. first
   - B. wrong
   - C. next
   - D. often
   - E. alone

6. a witness is a person who
   - A. trains animals
   - B. bakes cakes
   - C. observes actions
   - D. fixes machines
   - E. grows wheat

7. puss:
   - A. factory
   - B. devil
   - C. exercise
   - D. camp
   - E. cat

8. encyclopedia:
   - A. woman
   - B. reason
   - C. nation
   - D. food
   - E. book

9. advice:
   - A. record
   - B. visit
   - C. bridge
   - D. opinion
   - E. minute

10. tomb:
    - A. baby
    - B. market
    - C. grave
    - D. roof
    - E. scale

11. corps:
    - A. angry teacher
    - B. tired worker
    - C. sick animal
    - D. military unit
    - E. special vacation

12. tremendous:
    - A. serious
    - B. enormous
    - C. religious
    - D. famous
    - E. precious

13. approach means to come
    A. through
    B. with
    C. into
    D. between
    E. near

14. abandon:
    A. look over
    B. hold on
    C. lift up
    D. fall down
    E. give up

15. tarantula:
    A. grape
    B. highway
    C. button
    D. spider
    E. verse

16. mutiny:
    A. stranger
    B. puzzle
    C. rebellion
    D. lemon
    E. tenant

17. eligible:
    A. lonesome
    B. careless
    C. qualified
    D. inferior
    E. profound

18. sassafras:
    A. tree
    B. wave
    C. egg
    D. board
    E. yard

19. muff:
    A. water heater
    B. hand warmer
    C. glass cleaner
    D. paint dryer
    E. wood burner

20. stage:
    A. step in a process
    B. tear in a net
    C. condition in a treaty
    D. light in a tower
    E. article in a newspaper

21. gratify:
    A. heat
    B. shout
    C. hope
    D. charge
    E. please

22. cardiac means of the
    A. arm
    B. feet
    C. heart
    D. legs
    E. head

23. thus:
    A. not
    B. too
    C. why
    D. so
    E. do

24. lank:
    A. slender
    B. grateful
    C. musical
    D. lively
    E. rare

25. faction:
    A. dinner
    B. blood
    C. group
    D. passage
    E. hill

26. console:
    A. compare
    B. conclude
    C. comfort
    D. command
    E. collect

27. horde:
    A. circle
    B. shade
    C. word
    D. crowd
    E. sand

28. potpourri:
    A. tailor
    B. embassy
    C. schooner
    D. medley
    E. parson

29. albacore:
    A. tire
    B. soldier
    C. box
    D. fish
    E. stick

30. mesquite:
    A. office
    B. tree
    C. fire
    D. store
    E. gate

31. destitute:
    A. respectful
    B. divine
    C. urgent
    D. slippery
    E. needy

32. jujube:
    A. candy
    B. echo
    C. poem
    D. harvest
    E. brick

33. a triphthong is a combination of three
    A. fossils
    B. cables
    C. diagrams
    D. vowels
    E. atoms

34. piñon:
    A. piano
    B. pioneer
    C. pine
    D. pinch
    E. pint

35. bezant:
    A. hotel
    B. coin
    C. mill
    D. harbor
    E. desk

36. cinereous:
    A. ashen
    B. precise
    C. bashful
    D. valiant
    E. nimble

37. dint:
    A. supply
    B. wish
    C. force
    D. price
    E. demand

38. qua:
    A. during
    B. as
    C. while
    D. if
    E. when

39. redact:
    A. edit
    B. invert
    C. convict
    D. inherit
    E. afflict

40. jaconet:
    A. tribe
    B. gift
    C. port
    D. treaty
    E. cloth

UNTIMED THE BASIC WORD VOCABULARY TEST SHORT FORM Z

NAME:_____ DATE TESTED: Month Day Year _____

SEX: M F DATE OF BIRTH: _____

EDUCATION: Current grade level_____. If not in school, highest grade successfully completed_____. In in college, or college graduate: Academic major_____ and highest degree earned_____.

DIRECTIONS: Select the word or phrase which has the same meaning, or most nearly the same meaning, as the underlined word. CIRCLE the letter (A, B, C, D, or E) of your answer choice. Read all answer choices before making your choice. If you do not know the correct answer–guess!

EXAMPLE

a boy is a
- A. lip
- B. bush
- C. rock
- (D) child
- E. horse

1. a car is to
   - A. start fires with
   - B. eat on
   - C. take pictures with
   - D. ride in
   - E. draw with

2. ink is used to
   - A. walk on
   - B. write with
   - C. cut with
   - D. serve with
   - E. stand on

3. poor means having very little
   - A. money
   - B. hair
   - C. sun
   - D. time
   - E. snow

4. combat:
   - A. point
   - B. report
   - C. fight
   - D. start
   - E. admit

5. a mistake is something done
   - A. first
   - B. wrong
   - C. next
   - D. often
   - E. alone

6. howl:
   - A. roar
   - B. design
   - C. propose
   - D. depart
   - E. succeed

7. phony:
   - A. tough
   - B. neutral
   - C. vivid
   - D. fake
   - E. hasty

8. advice:
   - A. record
   - B. visit
   - C. bridge
   - D. opinion
   - E. minute

9. burlap:
   - A. tunnel
   - B. medicine
   - C. soil
   - D. engine
   - E. fabric

10. a seamstress is a woman who
    - A. writes
    - B. sews
    - C. sings
    - D. paints
    - E. bakes

11. approach means to come
    - A. through
    - B. with
    - C. into
    - D. between
    - E. near

12. abandon:
    - A. look over
    - B. hold on
    - C. lift up
    - D. fall down
    - E. give up

13. barely:
   A. generally
   B. scarcely
   C. completely
   D. especially
   E. gradually

14. sneer:
   A. listen with interest
   B. practice with care
   C. look with scorn
   D. lift with ease
   E. dance with joy

15. eligible:
   A. lonesome
   B. careless
   C. qualified
   D. inferior
   E. profound

16. exclude:
   A. educate
   B. excite
   C. eliminate
   D. encourage
   E. ensure

17. juvenile:
   A. haunted
   B. youthful
   C. intimate
   D. favorable
   E. unable

18. jolt:
   A. justify
   B. join
   C. judge
   D. jar
   E. journey

19. gratify:
   A. heat
   B. shout
   C. hope
   D. charge
   E. please

20. rafter:
   A. angel
   B. canal
   C. beam
   D. lamb
   E. trunk

21. lank:
   A. slender
   B. grateful
   C. musical
   D. lively
   E. rare

22. console:
   A. compare
   B. conclude
   C. comfort
   D. command
   E. collect

23. manipulate:
   A. reserve
   B. devote
   C. handle
   D. inquire
   E. introduce

24. concrete:
   A. clean
   B. mean
   C. low
   D. nice
   E. real

25. destitute:
   A. respectful
   B. divine
   C. urgent
   D. slippery
   E. needy

26. bastion:
   A. fortification
   B. qualification
   C. appropriation
   D. legislation
   E. illustration

27. forgo:
   A. represent
   B. sacrifice
   C. justify
   D. determine
   E. display

28. mackintosh:
   A. raincoat
   B. tractor
   C. honeybee
   D. cartoon
   E. saucepan

29. trajectory:
   A. curved path
   B. ill health
   C. bold type
   D. glorious spirit
   E. strong back

30. a triphthong is a combination of three
   A. fossils
   B. cables
   C. diagrams
   D. vowels
   E. atoms

31. whist:
   A. captain
   B. game
   C. soul
   D. finger
   E. rock

32. fetid:
   A. exhausted
   B. stinking
   C. pathetic
   D. meager
   E. insane

33. bezant:
   A. hotel
   B. coin
   C. mill
   D. harbor
   E. desk

34. scintillate:
   A. develop
   B. whistle
   C. ruin
   D. breathe
   E. flash

35. glib:
   A. unaware
   B. fluent
   C. reluctant
   D. philosophical
   E. inquisitive

36. dint:
   A. supply
   B. wish
   C. force
   D. price
   E. demand

37. sarcophagus:
   A. coffin
   B. insect
   C. interview
   D. wharf
   E. mushroom

38. diabolo:
   A. bed
   B. dance
   C. game
   D. mark
   E. record

39. lempira:
   A. chair
   B. money
   C. salt
   D. earth
   E. music

40. pyrope:
   A. reptile
   B. heather
   C. slogan
   D. mantle
   E. garnet

41. redact:
   A. edit
   B. invert
   C. convict
   D. inherit
   E. afflict

———— ○○○ ————

APPENDIX VII

SCORING METHOD FOR SHORT FORMS AND ANSWER KEYS

Recommended scoring method.—Score through the 4th error or omitted item and subtract 4 from the 4th error or omitted item number. Thus if an individual made two errors and omitted one item through item 19 and then missed or omitted item 20, his score would be 20-4 or 16.

Answer Keys

Form X				Form Y				Form Z			
1	D	21	C	1	A	21	E	1	D	21	A
2	A	22	D	2	B	22	C	2	B	22	C
3	C	23	E	3	E	23	D	3	A	23	C
4	D	24	B	4	B	24	A	4	C	24	E
5	A	25	A	5	B	25	C	5	B	25	E
6	C	26	C	6	C	26	C	6	A	26	A
7	E	27	C	7	E	27	D	7	D	27	B
8	B	28	E	8	E	28	D	8	D	28	A
9	E	29	B	9	D	29	D	9	E	29	A
10	A	30	E	10	C	30	B	10	B	30	D
11	B	31	D	11	D	31	E	11	E	31	B
12	A	32	B	12	B	32	A	12	E	32	B
13	A	33	D	13	E	33	D	13	B	33	B
14	B	34	A	14	E	34	C	14	C	34	E
15	B	35	E	15	D	35	B	15	C	35	B
16	D	36	E	16	C	36	A	16	C	36	C
17	A	37	B	17	C	37	C	17	B	37	A
18	D	38	C	18	A	38	A	18	D	38	C
19	C	39	E	19	B	39	A	19	E	39	B
20	A	40	C	20	A	40	E	20	C	40	E
										41	A